FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED LAUREL TO BRIDGER 100-KV TRANSMISSION PROJECT

AUGUST 1985

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August 1985

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EXECUTIVE SUMMARY

In May 1985, the Department of Natural Resources and Conservation (DNRC) released its draft environmental impact statement (EIS) on the Montana Power Company (MPC) proposed 100-kV transmission line from Laurel to a planned substation near Bridger. This final EIS summarizes and updates the draft, contains a chapter consisting of comments and questions pertaining to the draft EIS and DNRC's response to these, and presents DNRC's final conclusions and recommendations to the Board of Natural Resources and Conservation (Board).

DNRC received eight letters in response to the draft EIS: one from MPC, three from landowners along possible routes of the line, and four from various government agencies. Twelve landowners attended a meeting that DNRC held in Laurel on June 20, 1985, and five of them presented oral comments.

The main issues raised in the comments pertain to whether the proposed line is needed, whether alternative transmission solutions besides the proposed line exist, whether it is possible to put the proposed line on the same set of poles as some other line, whether it is advisable to place two lines next to each other to achieve reliability of electric service, and what potential land-use conflicts the line might cause. The routes evaluated for this project are shown in figure 1.

Concerning need, DNRC did not receive any convincing information that the reliability problems between Bridger and Red Lodge, and in other areas nearby to a lesser extent, could be served by any other option at comparable cost and with equally low environmental impacts. Though it might be possible to put more than one line on a single set of poles, the poles on the existing lines are not strong enough for this, so new poles would be required, increasing the cost of the new line from $63,000 per mile to at least $111,000, depending on which other line was put on the same structures.

Regarding the rationale for placing lines next to each other when reliability is being sought, DNRC concluded that although there are instances when a single event such as vandalism or a landslide might take out both lines, there is no reason to think that the likelihood of this would be such as to reduce the overall reliability or override the advantages of having the lines together. The advantages include low impacts to people and agriculture, and low environmental impact because both lines could use the same access roads.

DNRC concedes the new line could cause some land-use impacts, but use of MPC's Proposed Route would reduce the number and severity of such problems. These impacts can be reduced to the minimum by choice of a final centerline to avoid sensitive areas. DNRC, MPC, and affected landowners all will participate in choosing the centerline.

New information that became available after publication of the draft EIS includes the determination (required by the Siting Act) that the project could meet all the requirements of the Montana Department of Health and Environmental Sciences regarding air and water quality and the disposal of trash and garbage generated by construction activities.

Also, DNRC recalculated the monetary benefits of the proposed project and found them to be lower than those presented in the draft EIS. The adjustment was made because a 50-kV line that MPC built in 1984 would relieve a portion of the reliability problem that DNRC considered in its initial calculations on the benefits of the proposed line. Despite this reduction, the proposed line is still reasonably likely to have benefits to electric customers well above the cost of construction and maintenance.

In another change from the draft, DNRC recommends a 1-mile-wide route, rather than the 2-mile-wide route requested by MPC. The route recommended by DNRC would center on the existing "A" line, which would ensure that the new line would not be more than a half mile from the present line, thus providing for low overall environmental impact. DNRC considers the mile-wide route sufficient to allow the centerline to be located where it would avoid sensitive areas such as the automatic weapons range and explosives storage area, and the residential areas between the Yellowstone and Clarks Fork on the approach to Laurel.

FINAL CONCLUSIONS AND RECOMMENDATIONS

The draft EIS contained DNRC's preliminary conclusions, proposed recommendations to the Board, and suggested measures to reduce impacts of the project. The recommendations were presented as a means of obtaining comment on DNRC's proposed action. Comments on the draft did not cause DNRC to substantially change its preliminary conclusions and recommendations. Changes to the preliminary recommendations are shown by a line through the word or words to be changed. New language or recommendations are underlined.

These final recommendations are based on the information and public comment available to DNRC at the time of preparation of the final EIS. The Board is responsible for approving or denying this project and does not necessarily have to follow DNRC's recommendations.

CONCLUSIONS

1. Operation of the 50-kV system in the Laurel-Bridger-Red Lodge-Columbus area does not meet MPC's reliability criteria.

2. The proposed project, along with upgrading an existing line from 50-kV to 100-kV and building a new substation near Bridger, would provide the reinforcement necessary to satisfy MPC's reliability criteria.

In the long run, it may be necessary to provide voltage support to the Absarokee-Columbus side of the 50-kV loop. However, neither MPC or DNRC could identify a single line that could serve the electrical needs of the entire 50-kV loop from Laurel through Bridger, Red Lodge, and Absarokee, to Columbus.

3. The benefits from reduced outages to electric consumers served by the 50-kV system are reasonably likely to exceed the costs of the proposed project.

The calculated benefits of the proposed line were reduced on the basis of information available after publication of the draft EIS, but are still reasonably likely to exceed the costs of the project.

4. The expected net present value of costs for the proposed facility is less than those of other alternatives that could solve the area's electrical problems.

Load-flow studies and other information indicate that the proposed line will address the area's immediate electrical problems at the least cost.

5. Reasonable alternative locations for siting the transmission line were considered.

6. The facility, constructed along either the Applicant's Proposed Route or the Uplands Route, would not cause major adverse or unmitigable social, economic, natural, or physical environmental impacts if the mitigation measures identified in Appendix B are adopted.

7. Construction of the facility along MPC's Proposed Route would cause the least cumulative environmental impact at less economic cost than other reasonable alternatives. This route provides the best balance of factors to be considered using the ~~Board's~~ preferred route criteria listed in administrative rules adopted by the Board for the Siting Act (March 1985).

Based upon the public comments made at two meetings held in the area and on the draft EIS, DNRC believes that the Proposed Route has general public acceptance. Specific land-use concerns raised by landowners living along this route are best addressed during centerline analysis.

8. The facility would not cross any designated national wilderness or primitive area.

9. MPC's proposed project can be constructed to ~~minimize risk to~~ comply with Board standards designed to protect public health and safety from electrical noise, electric fields, or other electrical problems such as shocks and radio and television interference.

10. ~~The route proposed by MPC is wide enough to locate a centerline.~~ A route 1 mile wide centered on the existing Laurel-Bridger "A" line would be wide enough to allow location of a low impact centerline. This is less than the 2-mile-wide route applied for by MPC.

11. DNRC consultation with State Aeronautics and Federal Aviation Administration (FAA) ~~FAA~~ during centerline analysis will be required to determine what markings if any are required for pilot safety at crossings of streams and valleys.

12. DNRC concludes that placing the line underground would not be an economically practical method for reducing potential impacts of the project.

RECOMMENDATIONS

1. The Board should grant a Certificate of Environmental Compatibility and Public Need to MPC for construction of the Laurel to Bridger 100-kV transmission line.

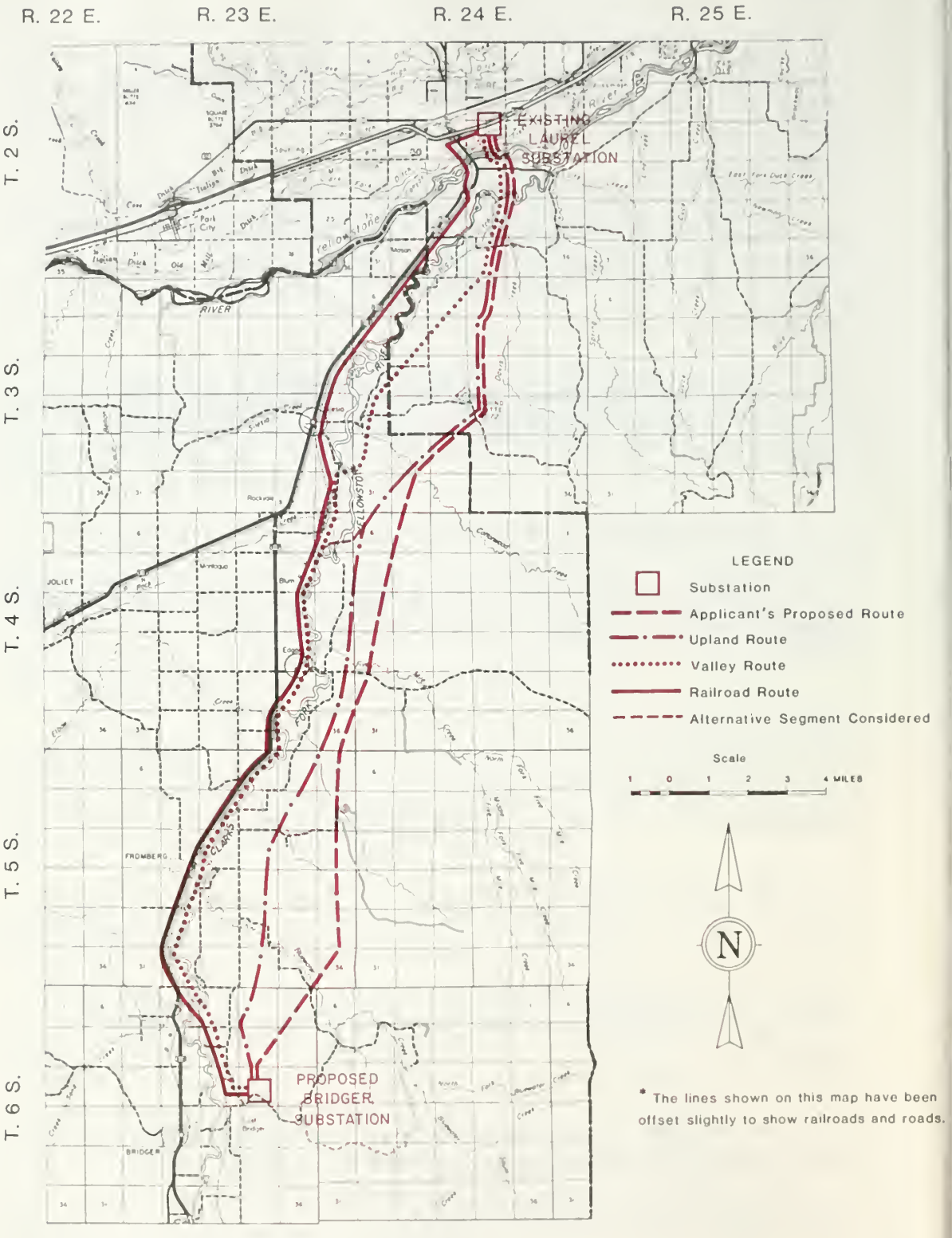
2. The proposed project should be built on MPC's Proposed Route.

3. The Board should approve a 1-mile wide route to be analyzed further for location of a final centerline. Also see recommendation 5.

~~3~~4. The Board, in approving any route, should attach requirements for reducing or avoiding impacts, including erosion, sedimentation, weeds, and impacts to wildlife, visual, historical, and archaeological resources. These measures are included in DNRC's proposed Environmental ~~Transmission Line Construction~~ Specifications, Appendix B, in the draft EIS.

~~4~~5. MPC should apply for and the Board should approve a final centerline within the selected route before construction begins, following the process and schedule detailed in the recently adopted administrative rules and legislative changes to the Siting Act. At the time of route certification, work could begin to install additional equipment required at the Laurel and Bridger substations.

~~5~~6. MPC and DNRC should develop a program for monitoring construction to be submitted for Board consideration at the time of centerline approval.



* The lines shown on this map have been offset slightly to show railroads and roads.

FIGURE 1

APPLICANT'S PREFERRED AND ALTERNATE ROUTES *

CHAPTER ONE
INTRODUCTION

In May 1985, the Department of Natural Resources and Conservation (DNRC) released its draft environmental impact statement (EIS) on the Montana Power Company (MPC) proposed 100-kV transmission line from Laurel to a planned substation near Bridger. This final EIS summarizes and updates the draft, contains a chapter consisting of comments and questions pertaining to the draft EIS and DNRC's response to these, and presents DNRC's final conclusions and recommendations to the Board of Natural Resources and Conservation (Board).

A 30-day comment period followed issuance of the draft EIS and ended July 1, 1985. DNRC received eight letters in response to the draft EIS: one from MPC, three from landowners along possible routes for the project, and four from state, federal, or local government agencies. Twelve landowners attended a public meeting DNRC held on June 20, 1985, and five of them presented oral comments. These comments and questions are responded to directly in Chapter Four. New information that became available after release of the draft EIS is addressed in Chapter Three. Important issues raised over the line include whether the line is needed, alternative transmission solutions besides the proposed line, the possibility of putting the proposed line on the same set of poles as some other lines (double circuiting), reliability of lines placed next to each other rather than miles apart, and potential land-use impacts.

The issues and concerns of commenters may be discussed in further proceedings before the Board. The Montana Major Facility Siting Act (Siting Act) requires the appointment of a hearings officer and setting of a hearing date by the Board after release of this final EIS. The Board will hear testimony and will use the hearing record to determine the following:

(1) the basis of need for the facility;
(2) the nature of the probable environmental impacts;
(3) that the facility represents the minimum adverse environmental impact considering the state of available technology and the nature and economics of the various alternatives;
(4) the applicable criteria set forth in section 75-20-503, MCA;
(5) what part, if any, of the line should be located underground;
(6) that the facility is consistent with regional plans for expansion of the interconnected grid;
(7) that the facility will serve the interests of the utility system economy and reliability;
(8) that the location of the facility conforms to applicable state and local laws;
(9) that the facility will serve the public interest, convenience, and necessity;
(10) that the Montana Department of Health and Environmental Sciences has issued any permits required that are under its jurisdiction; and
(11) that the use of public lands for location of the facility was evaluated and public lands were selected whenever their use is as economically practical as the use of private lands and compatible with the environmental criteria in the Siting Act.

The Board also may be required to determine whether the project would meet the standards pertaining to need and minimum impacts as required by the recently adopted administrative rules implementing the Siting Act.

After the hearing, if the Board determines that the project meets the requirements of the Siting Act, it will issue a Certificate of Environmental Compatibility and Public Need, and will describe what conditions will be attached to the certificate. If it issues the certificate, the Board will designate a route of a specified width within which the line must be constructed. A wide route allows MPC maximum flexibility in placing structures where they will be the least harmful or inconvenient for landowners and the public, but a wide route also leaves landowners with less certainty about the final location of the line. DNRC recommends a route 1-mile wide centered on

the Laurel to Bridger "A" line as discussed in Chapter Three of this report. Selection of the line's final location within the route is referred to as "centerline analysis," which MPC does, with assistance from DNRC and affected landowners, land managers, and public agencies, after a certificate has been issued. The Board will again be responsible for making a final decision on the centerline within the approved route. This approval would include whatever conditions the Board deems necessary to comply with the Siting Act.

DNRC monitors construction to ensure that the conditions the Board attaches to the certificate are met. After construction, DNRC monitors revegetation and other efforts to alleviate impacts of the line, as specified by the Board.

CHAPTER TWO
SUMMARY OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

This chapter summarizes the draft EIS and does not include information gathered since the draft EIS was published.

In compliance with the Montana Major Facility Siting Act, the Montana Power Company (MPC) has applied for a Certificate of Environmental Compatibility and Public Need for a proposed transmission line. This line would be a 100 kilovolt (kV) transmission line from a substation at Laurel to another substation scheduled for construction about 2 miles northeast of Bridger. Like the "A" line, the new line would be built on H-frame wooden structures with a 60-foot right-of-way for most of its length, but could use single-pole structures and a 40-foot right-of-way in cultivated areas. Four of the "A" line structures are located on cultivated land, and it is likely that about the same number of structures would be required on cultivated land for the proposed new line.

MPC indicates in its application that the line is necessary to provide reliable electric service to the growing number of customers in the Bridger-Red Lodge area. At present, this area is served by a 50-kV system that draws power from Mystic Lake Dam west of Red Lodge and from MPC's 100-kV system at Laurel.

The need for the new line stems partly from the unpredictable availability of power from Mystic Lake Dam. The dam facilities do not always operate, either because of unscheduled shutdown or scheduled maintenance. If a major powerline goes down or otherwise becomes inoperable while the Mystic Lake facilities are off-line, voltages drop to unacceptably low levels and service to some customers is interrupted.

This susceptibility to outages violates MPC's system reliability criteria. To remedy the problem, MPC plans to build the proposed 100-kV line on a 27-mile route between a substation south of Laurel and the yet-to-be-built substation northeast of Bridger.

DNRC evaluated the benefits of improved reliability and concluded they are reasonably likely to be greater than the projected $2.2 million cost of the project.

MPC and DNRC evaluated various other options for improving system reliability, but none of these was both as effective and low in cost as the proposed line. The options considered include other routes for a new line between different substations as means to improve service on the 50-kV loop connecting Laurel-Bridger-Red Lodge-Columbus, upgrading the 50-kV line to 69-kV, and generation options such as combustion turbines, hydropower, wind and solar power, and conservation measures.

The routes evaluated by MPC and DNRC for a transmission line between Laurel and Bridger are shown in figure 1. MPC and DNRC analyses indicate that the route with the least impact would be MPC's Preposed Route on the highlands east of the valley floor. This route avoids most cultivated land, residential areas, wildlife habitat, and other potentially sensitive areas.

MPC's Proposed Route runs along an existing MPC line, called the "A" line, for its entire length. The two lines would look much the same and be as close as 80 feet in some areas.

A major advantage of MPC's Proposed Route is that it could use the existing "A" line access roads, which would eliminate or greatly reduce the need for a new system of access roads, consequently avoiding the impacts associated with such roads.

DNRC'S PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS FROM THE DRAFT EIS.

These preliminary conclusions and recommendations were commented upon by interested parties after publication of the draft EIS. For DNRC's final conclusions and recommendations, see the last chapter in this final EIS.

Preliminary Conclusions

1. The 50-kV system in the Laurel-Bridger-Red Lodge-Columbus area does not meet MPC's reliability criteria.

2. The proposed project, along with upgrading of the Laurel-Bridger "A" line from 50-kV to 100-kV and the construction of a new substation near Bridger, would provide the necessary reinforcement to satisfy MPC's reliability criteria.

3. The benefits from reduced outages to electric consumers served by the 50-kV system are reasonably likely to exceed the costs of the proposed project.

4. The expected net present value of costs for the proposed facility is less than those of other alternatives that could solve the area's electrical problems.

5. Reasonable alternative locations for siting the transmission line were considered.

6. The facility, constructed along either the Applicant's Proposed Route or the Uplands Route, would not cause major adverse or unmitigable social, economic, natural, or physical environmental impacts if the mitigation measures identified in Appendix B of the draft EIS are adopted.

7. Construction of the facility along MPC's Proposed Route would cause the least cumulative environmental impact at less economic cost than other reasonable alternatives. This route provides the best balance of factors to be considered in the Board's preferred route criteria.

8. The facility would not cross any designated national wilderness or primitive area.

9. MPC's proposed project can be constructed to minimize the risk to public health and safety from electrical noise, electric fields, or other electrical problems such as shocks and radio and television interference.

10. The route proposed by MPC is wide enough to locate an acceptable centerline.

11. DNRC consultation with State Aeronautics and FAA during centerline analysis will be required to determine what markings if any are required for pilot safety at crossings of streams and valleys.

12. DNRC concludes that placing the line underground would not be an economically practical method for reducing potential impacts of the project.

Preliminary Recommendations

1. The Board should grant a Certificate of Environmental Compatibility and Public Need to MPC for construction of the Laurel to Bridger 100-kV transmission line.

2. The proposed project should be built on MPC's Proposed Route.

3. The Board, in approving any route, should attach requirements for reducing or avoiding impacts resulting from erosion, sedimentation and weeds, and impacts to wildlife, visual, historical, and archaeological resources. These measures are included in DNRC's proposed Environmental Specifications, Appendix B, in the draft EIS.

4. MPC should apply for and the Board should approve a final centerline within the selected route before construction begins, as provided in the Siting Act and the administrative rules adopted under its authority. At the time of route certification, work could begin to install additional equipment required at the Laurel and Bridger automatic substations.

5. MPC and DNRC should develop a program for monitoring construction to be submitted for Board consideration at the time of centerline approval.

CHAPTER THREE
PROJECT UPDATE

This chapter is based on information gathered about the project since publication of the draft EIS. Some of the information presented here was not available when the draft was prepared. Other information is presented because of interest shown following issuance of the draft EIS.

DETERMINATION OF COMPLIANCE WITH ENVIRONMENTAL HEALTH STATUTES

In June 1985, the Department of Health and Environmental Sciences (DHES) issued a preliminary determination that the proposed project complies with environmental health aspects of the Major Facility Siting Act. The department published legal advertisements in area newspapers and requested comment on its initial determination. DHES received no comments during the 30-day period, and subsequently determined that the project can comply with laws and regulations for water quality and disposal of trash and garbage generated by construction activities. No air-quality impacts are anticipated. A copy of the DHES determination of compliance is included in Appendix A.

RECALCULATION OF EXPECTED BENEFITS OF THE LINE

In 1984, MPC built a short 50-kV line connecting lines from the Mystic Lake power plant to Red Lodge and Absarokee. This line reduces by about 13 miles the distance that power must be sent on the 50-kV loop when there is an outage anywhere on the 50-kV loop and the Mystic Lake power plant is not in service. It also reduces the low voltage problems in outage situations and reduces the benefits of the Laurel to Bridger "B" line by eliminating the benefits calculated for minor and worst case outages presented in table 2 of the draft EIS.

Load-flow studies reflecting the effects of this new line were submitted to DNRC too late for the information to be included in the draft EIS. These studies indicate that the proposed Laurel to Bridger "B" line is necessary to eliminate major outages shown in table 1, page 18, of the draft EIS. Such outages would be equivalent to loss of electric service to customers in the area between Bridger and Red Lodge. DNRC's recalculation of the line's benefits for the first year of operation (on the basis of the new load-flow studies) are shown in the following table which replaces table 2 on page 19 in the draft EIS.

REVISED ANNUAL BENEFITS OF THE PROPOSED LINE
(Dollars at their 1985 value)

Reduced Outage Costs	Low Estimate	Most Likely	High Estimate
Costs to Consumers of Outages			
Lost residential consumption	$6,300	$29,500	$105,200
Residential damage	9,600	21,700	33,800
Delayed retail sales	**	**	**
Commercial damage	4,000	8,900	13,900
Industrial losses	5,200	11,700	19,000
Backup generation	100	200	300
Reduced Uncertainty	300	700	900
Total	$25,500	$72,700	$173,100

**Values were calculated to be insignificant.

The most likely range of the value of lifetime benefits of the line was recalculated to be $1.6 million to $7.4 million, with the most likely value being about $4.2 million. This is a change downward from the draft EIS where a likely value of $5.3 million was calculated. However, DNRC still concludes that there is a reasonable likelihood that the benefits of the line exceed the costs.

NARROWER ROUTE WIDTH RECOMMENDED

DNRC's analysis in the draft EIS indicated that the Applicant's Proposed Route would have low impact on the human and natural environment. A major factor in this determination was the potential location adjacent to the existing Laurel to Bridger "A" line. Such a location would minimize the amount of new access roads required to construct the line. Thus a location on one or the other side of the existing line was viewed as a good location for the line. However, the benefits of the Proposed Route decrease as the distance from the present line increases.

In reviewing MPC's proposed 2-mile-wide route, DNRC concluded that a narrower route would allow sufficient flexibility in selecting a final centerline and would capitalize on the use of existing access roads. DNRC therefore selected a route 1-mile wide, 1/2 mile on either side of the existing line. It is DNRC's intent that the line be located as near as 80 feet from the "A" line unless good reasons to move portions of it away from the present line are identified during the centerline analysis. Issues that could affect the final centerline placement include a small landslide in the route near Cottonwood Creek, and siting constraints including a firearms test range, storage areas for explosives, a planned house site, and residential areas and crop land near the proposed crossing of the Clarks Fork and Yellowstone River valleys to the Laurel substation. In all these areas DNRC considers the 1-mile route wide enough to allow the line to be built away from sensitive locations.

CHAPTER FOUR
COMMENTS AND RESPONSES

This chapter contains comments on the draft EIS and DNRC's responses to them. The comments presented here represent a summary of those received by DNRC in writing and orally at the public meetings on the draft EIS. Additional information pertaining to comments is provided in Chapter Three as noted in DNRC's responses.

The comments in this chapter are organized by subject. Copies of letters received are contained in Appendix B.

GENERAL

COMMENT: On page i, paragraph 3, substations at Laurel and Bridger are denoted as "automatic" substations. This notation is awkward. Common nomenclature is "auto" substation because they contain autotransformers. (MPC in letter 1)

RESPONSE: Comment noted.

COMMENT: On page 3, paragraph 3, the term "individual contacts" would benefit from some description of how the individuals were contacted; for example, were these contacts purely chance encounters or the result of a predesigned survey? (MPC in letter 1)

RESPONSE: DNRC obtained information from interviews with local officials and interested citizens who attended public meetings. Some interviews were in person and others were by telephone.

COMMENT: On pages 8 and 9, figures 3 and 4, respectively, are misleading. The main problem is that the reader concludes from figure 3 that roads are cut along the line as a general practice, even across level ground. This may lead to greatly elevated levels of expected impacts on the part of landowners. This distortion serves no one, least of all the landowners along the route. The lead crew (figure 3) is not installing foundations but is drilling holes. Foundations are not used for wood pole structures. (MPC in letter 1)

RESPONSE: The figures represent the typical situation that could occur in constructing a 100-kV transmission line. Explanation of potential road grading is provided in the text on page 10 where references to figures 3 and 4 are made. Several possible conditions could require grading, including steep slopes and presence of brush or other obstructions to cross-country travel. Where existing roads and trails are available, they could be used for access during construction. Figure 4 indicates that access can be achieved by cross-country travel. While technically imprecise, the word "foundation" is broad enough to cover drilling of holes to support transmission line structures. In any case, the depictions in figures 3 and 4 are essentially correct, relative to construction procedures and general types of equipment used.

COMMENT: On page 10, paragraph 5, the first sentence states that construction will take about nine weeks. This conflicts with figures on page 30 and with estimates provided in the permit application. (MPC in letter 1)

RESPONSE: The information on page 10 is not correct. As stated on page 30, construction of the transmission line is expected to take about 88 days.

COMMENT: On page 30, second paragraph, reference is made to the land area removed from production by the new Bridger substation. The new substation is not part of the permit application and the sentence should be removed. (MPC in letter 1)

RESPONSE: The new Bridger substation is an endpoint for the proposed line. The substation will remove some rangeland from production and this impact should be disclosed.

COMMENT: What do the various bracket forms and three enclosed numbers signify in table 4, page 40? (MPC in letter 1)

RESPONSE: The first note on the bottom of page 40 explains that the bracketed numbers are miles in each land-use category that the Upland Route would be adjacent to the Laurel to Bridger "A" line. Other numbers in the Upland Route column indicate total miles of each land-use category crossed.

COMMENT: The statement in paragraph 2 on page 28 implies grounding is required wherever fences are crossed by the line. MPC does not intend to follow such a practice for all fences crossed. This will be handled on a case-by-case basis with remedial action taken where warranted. (MPC in letter 1)

RESPONSE: DNRC's Environmental Specifications and Board decision standards provide that the line be constructed in accordance with the National Electric Safety Code. This would apply to practices used in grounding fences or other objects as necessary. Further, the Board may require, as conditions of its approval, additional requirements for such things as grounding when it approves the centerline. These conditions would become part of the environmental specifications adopted by the Board.

COMMENT: The third paragraph on page 32 refers to noxious weeds in the two counties, and table 3, page 32, refers to noxious weeds in the study area. The more important question is: Are there noxious weeds in the alternative routes? (MPC in letter 1)

RESPONSE: In the first paragraph on page 32, the statement is made that leafy spurge exists along Blue Water Creek and has been identified by the Carbon County Weed Supervisor as a potential weed source. This source of weeds would be crossed by the Uplands and Applicant's Proposed routes. There may be other potential sources of weeds in these or other routes. All weedy areas identified in the approved route during centerline analysis by DNRC, MPC, and county weed supervisors would be included as an appendix to the Environmental Specifications (see 2.8.6) adopted by the Board. Weed control, and revegetation would be done according to plans developed by MPC and DNRC through provisions in the Environmental Specifications.

COMMENT: What is the length of the 50-kV loop serving the Laurel-Bridger-Red Lodge-Columbus-Laurel area? (landowner in a public meeting comment)

RESPONSE: DNRC estimates that the line is approximately 165 miles long.

COMMENT: On page 27 the report states, "Bald eagles ... winter along rivers in small numbers, though no regularly used roosts are known in the study area. Bald eagle nests were located within the study area in 1971 and 1976, but none is known to be in use in the vicinity at present." Though I have not observed bald eagle nests along this stretch of the Yellowstone River, I have certainly seen bald eagles here during the winter, spring, and summer. Consequently, I would assert that bald eagles are roosting and/or nesting along the river at present. (landowner in letter 3)

RESPONSE: Up to 31 bald eagles have been recorded along the Yellowstone River between Billings and the Big Timber area during the National Wildlife Federation's annual midwinter bald eagle surveys conducted during the period 1981 through 1984. While mature cottonwoods along the river's edge are important habitat for these birds, no regularly-used communal roost sites are known within the project area (Brewster 1982). No bald eagle nests, active or inactive, were observed in the project area during DNRC's field surveys. Regardless of the route finally approved by the Board, a search for bald eagle nests will be

made during the centerline analysis. Measures will be taken to protect any nests that are found. No impacts to bald eagle populations are expected for this project.

COMMENT: The Department of Highways (DOH) endorses the Applicant's Proposed Route. The Proposed Route minimizes commuter and contractor truck traffic on the area's primary and secondary roads during an estimated 88-day construction period. If this option is not adopted, there is potential for an increase in the duration of the construction period, and a potential for new public road accesses. (DOH in letter 5)

RESPONSE: Comment noted.

COMMENT: MPC is advised to obtain a Standard Right-of-Way Encroachment Permit (RW-20) for any aerial road crossings or pubic road access routes. These permits are available from the DOH Billings District Office.

It is understood that the contractor will use adequate signs at public road accesses during construction. It is also understood that the contractor will not exceed rated load limits on any structure or road segment during construction or subsequent maintenance. (DOH in letter 5)

RESPONSE: Consultation and coordination with Department of Highways on these matters is required by DNRC's Environmental Specifications (see section 2.6 and 2.7) in Appendix B of the draft EIS.

COMMENT: How was the right-of-way acquisition cost dealt with in the application and draft EIS? (landowner in a public meeting comment)

RESPONSE: MPC's construction cost estimates include estimated costs of right-of-way acquisition. These estimates are based on past experience and take into account the general land types to be crossed. These estimates were used by DNRC in the analysis presented in the draft EIS.

COMMENT: Will there be a hearing or meeting on the final EIS? (landowner in a public meeting comment)

RESPONSE: No meeting will be conducted on the final EIS as such. Written comments on the final EIS can be submitted to DNRC within 15 days after its release.

After release of the final EIS, the Board will appoint a hearings examiner who will be responsible for conducting contested case hearings on the project. During administrative hearings of this type, rules of evidence are in effect and witnesses may be cross examined. Notice of these proceedings will be sent to persons receiving the final EIS. Individuals wishing to participate in the hearings can do so either as active parties to the proceedings or as members of the public commenting on project issues. The Board also will conduct a public meeting to consider findings of fact and conclusions of law determined from the hearings, although members of the public and landowners will not have an opportunity to present further evidence on the project at this meeting. The Board may allow parties to the administrative hearing to comment on issues of fact and law being considered by the Board in its decision-making process.

During the centerline selection process, DNRC will hold public meetings to obtain comment from affected landowners. A centerline report will be prepared and submitted to the Board and affected landowners. The Board also will allow public comment at a hearing on centerline proposals before making a decision on the final location for the line.

COMMENT: Wording in the draft, particularly page 43, indicates that a location for the line downslope of the Laurel-Bridger "A" line has been selected. (landowner in letter 2)

RESPONSE: DNRC's review indicates that the Proposed Route allows for the final centerline to be located on either side of the present line. During centerline analysis, DNRC, MPC, and affected landowners do a detailed evaluation of reasonable alternative centerlines within the route and determine where the line should be placed to minimize impacts. The statements in the draft that the comment refers to were intended to identify possible measures to reduce impact to a single resource area. During centerline study, impacts to all resources would be balanced to allow selection of the least impact location.

COMMENT: Would it be possible to put the existing lines and the proposed line on the same set of poles? (landowner in letter 3)

RESPONSE: Double-circuit construction, which is the installation of two transmission lines on one pole or structure, might be possible. MPC indicates that either the 50-kV Laurel-Mystic Lake or the Laurel-Bridger 100-kV "A" line could be double circuited with the proposed line. However, new structures would be required. The existing structures were designed to carry only one line and are not strong enough to hold two lines. Also, they are the wrong configuration to hold two transmission line circuits.

COMMENT: Is it possible to take the existing 100-kV line temporarily out of service to allow installation of a double circuit? (landowner in a public meeting comment)

RESPONSE: Yes, it is possible. However, it would have to be done during a period of low load, preferably while the Mystic Lake plant is operable.

COMMENT: What are the cost estimates for double circuiting? (landowner in a public meeting comment)

RESPONSE: MPC estimates the cost of double-circuit construction for two 100-kV lines to be about $118,000 to $121,000 per mile. Double-circuit construction of one 100-kV and one 50-kV transmission line is calculated at about $108,000 to $111,000 per mile. These costs include acquisition, labor, materials, and costs associated with removal of the line which is to be double circuited with the proposed line. These costs are based on past construction costs updated to 1985 and include an annual inflation figure of 7 percent. Construction costs for the proposed line are estimated at $63,000 per mile.

COMMENT: What is the rationale for constructing new lines close to existing lines to achieve reliability? (landowner in letter 2)

RESPONSE: There are no data to support firm conclusions about increases or decreases in how reliable transmission lines are if constructed adjacent to each other rather than miles apart. Placing transmission lines closer together probably does increase the risk that an outage due to weather or vandalism can cause both lines to be out of service. This risk of outage must be balanced against other factors including impacts associated with placing a new line along a different route. The major consideration in building of parallel lines is that they be spaced far enough apart to prevent one line from falling into the other. See the following comment on outages associated with structure failure.

Generally, construction of parallel lines is considered a good idea when access roads built for one line can be used for the new line. In the case of the Laurel-Bridger "B" line, existing access and potential for low land-use impacts favored construction of the two lines parallel each other. In the past, the Board has also supported paralleling as a means of reducing impacts.

COMMENT: What percentage of transmission line failures are attributable to structural failures? (landowner in public meeting comment)

RESPONSE: MPC indicated that its data do not provide a precise answer to this question. However, most transmission outages are probably the result of external forces, such as lightning causing broken insulators, downed poles, or broken conductors.

COMMENT: Will the new line require a new right-of-way and structures? (landowner in a public meeting comment)

RESPONSE: As proposed by MPC, the new line would require a new right-of-way and structures. For H-frame structures, MPC would acquire a 60-foot right-of-way, while with single-pole structures, the right-of-way could be 40-feet wide.

NEED AND ALTERNATIVES

COMMENT: What is the reliability criteria MPC uses for its transmission system? (landowner in a public meeting comment)

RESPONSE: MPC regards its service as reliable if all customers can be served with electricity at between 90 and 105 percent of normal voltage during the worst single transmission line outage.

COMMENT: The reason for the deterioration of voltage levels is load growth, which may be due to more than population growth -- population growth is merely one factor. MPC has experienced load growth of 6.7 percent per year in the study area as stated on page 14 (revised 12/84) of the application. The draft EIS wold be more accurate if the following changes were used on page 5, last paragraph.

This condition is likely to get worse because of expected ~~population~~ load growth in the area. ~~Carbon County experienced 14 percent population growth between 1970 and 1980.~~ MPC calculations based on experience through 1983 show an annual growth rate of approximately 6.7 percent for the study area. (MPC in letter 1)

RESPONSE: DNRC agrees. DNRC also notes that MPC experience is based on load data for the period 1972 through 1983.

COMMENT: Population growth from 1960 to 1980 was 4.0 percent (from Table 2.3-1 of the Permit Application, Volume 1). This includes a population decrease of 12.4 percent from 1960 to 1970 and a population increase of 18.6 percent from 1970 to 1980. We suggest that due to the economic slowdown of the last five years that the growth for the period 1980 to 1990 will be quite small. The area has already demonstrated the potential for a reduction in population as indicated by the 12.4 percent population decrease for the period 1960 to 1970. (landowner in letter 2)

RESPONSE: Population growth is only one factor in load growth. It is load growth that influences whether MPC can demonstrate a need for the line. Information from MPC indicates that during the period 1972-1983 loads grew at a rate of 6.7 percent per year. DNRC prefers not to rely on simple trend forecasts and used a range of growth rates, in this case 5.1 to 7.1 percent, for determining the expected benefits of the line.

DNRC notes that between 1980 and 1984, population growth in Stillwater and Carbon counties continued to exceed the statewide growth rate. According to population estimates developed by the U.S. Bureau of the Census, Stillwater County's population grew from 5,600 to 6,000, an increase of 7.5 percent. Carbon County's population grew from 8,089 to 8,600, a 6.3 percent increase. Montana's statewide population growth was 4.7 percent during the same period.

COMMENT: Load growth calculations from Exhibit F of the permit application, Volume 2, produced a stated growth of 7.3 percent based upon the 1972 to 1981 data. Data are absent for 1982, 1983, and 1984. These data would be helpful. During the period since 1981, emigration from the State of Montana has substantially increased due to the economic stress which to date has not improved. Additionally, load data for the period 1960 to 1972 which would help us understand the trends for the past 20 years were not included. (landowner in letter 2)

RESPONSE: Additional load data for the period 1982 to 1984 were supplied by MPC to DNRC in November 1984, after the application was filed. Calculation by MPC of growth for the period 1972-1983 based on this information led MPC to revise the stated growth rate downward to 6.7 percent per year. DNRC sent this commenter the data mentioned. This information also is included in Appendix C.

The comment is incorrect in implying that there has been a population decrease in Montana since 1981. The Montana Statistical Abstract 1984, published by the Montana Department of Commerce, shows that the state experienced population growth of 4.7 percent for the period 1980 to 1984.

The only data available for the period prior to 1972 pertain to peak winter loads for some substations. DNRC examined these data and found no evidence to indicate that loads grew differently before 1972 than after.

COMMENT: What are the problems with the Laurel to Bridger "A" line now? Does it meet the MPC system criteria? Have the criteria changed or has demand changed? (landowner in public meeting comment)

RESPONSE: The problems with the "A" line are dealt with in detail farther on in this section. MPC's reliability criteria apply to the system serving an area as a whole, not to any particular transmission line alone. As a result of load growth and the limited power transfer capacity of the 50-kV loop, the transmission system in the Laurel-Bridger-Red Lodge-Absarokee-Columbus area violates MPC's reliability criteria.

COMMENT: MPC states in Section 2.2.2 of the Permit Application Volume 1 that "a problem exists when the Laurel Auto-to-South Laurel REA 50-kV is out of service because the existing 50-kV system cannot support the Laurel-Bridger area loads." This problem can easily be resolved by boosting the "A" line to Bridger from 50-kV to 100-kV at a cost of $430,000 as discussed in the Permit Application. This would meet the

+5 percent to -10 percent voltage fluctuation criteria for many years based upon the growth observed. The Laurel to Bridger line built in 1975 has not been a problem in terms of outages based upon data in Exhibit D of the Permit Application, Volume 2. If this line were operated at its 100-kV capacity, there would also be no outage problem. In fact, the outages on the Laurel South 50-kV line must also be minor since the data in Exhibit D do not suggest a serious problem. In summary, the proposed line serves no useful purpose other than to increase theoretical reliability. (landowner in letter 2)

RESPONSE: Load-flow studies performed by MPC were used to model the operation of the Laurel-Bridger "A" line at 100-kV and various outage conditions. These studies were reviewed by DNRC's electrical engineering consultant and show that line outages will cause low voltages with the existing Laurel-to-Bridger line energized at 100-kV. These studies also show that low voltage problems would be solved by the proposed line.

Boosting the Laurel-to-Bridger "A" line to 100-kV will provide voltage support to the Bridger-Red Lodge areas through at least 1992. However, reliability of that line is the issue. Data on system outages from MPC indicates that the Laurel-Bridger "A" line experiences outages at about the same frequency as other lines in the area. Under MPC reliability criteria, the transmission and generation system must be able to supply voltage levels at substations within a range of 90 to 105 percent of normal. These criteria must be met even if a major transmission line or other source of power is out of service. The "A" line, when operating at 100-kV, will be the major power supply source to the Bridger-Red Lodge area. When the "A" line experiences an outage, low voltages will occur, resulting in loss of service. The basis of need for the proposed project is reliability or backup for the "A" line and service it provides.

COMMENT: When were outages at Mystic Lake first identified as a problem for the Laurel-Bridger-Red Lodge-Columbus system? (landowner in a public meeting comment)

RESPONSE: MPC indicates that it first became concerned with the reliability of generation from Mystic Lake in early 1979, when the effects of a major pipeline failure on the transmission system's reliability became apparent.

COMMENT: How much load capacity does MPC feel it needs to cover projected growth in the Laurel-Bridger-Red Lodge-Mystic Lake areas? (landowner in a public meeting comment)

RESPONSE: MPC indicates that the minimum transfer capacity to supply Bridger and Red Lodge is 20 MW. Additional load growth could come from many sources, such as electric heat customers, commercial or industrial development, and increased electricity use by existing residential, commercial, or industrial customers. MPC expects loads to grow at 6.7 percent per year. The power transfer capacity in the area is planned to meet anticipated growth until at least 1992. Additional lines for increased power transfer capacity may or may not be needed after that, depending on the magnitude and location of future developments.

COMMENT: The real problem that needs to be addressed is the outage problem in the transmission lines from Red Lodge to Mystic to Columbus to Laurel based on the data in Exhibit D of the Permit Application, Volume 2. This section of the loop represents the overwhelming number of outages. These lines were constructed in the 1920s and need improvement. In fact, the needed improvement in the above mentioned lines, coupled with energization of the existing Laurel "A" to Bridger line to the 100-kV level, would serve the communities in the loop into the 21st century, based on data presented in the permit application. In terms of the reality of the situation, it is incredible to us that MPC would not attempt to solve the severe outage problems where they exist in the loop rather than attempt to

construct a new line which only improves the theoretical reliability to projected population where the data are not sufficient to establish growth. (landowner in letter 2)

RESPONSE: This comment incorrectly asserts that the real reliability problem is in the 50-kV loop connecting Red Lodge-Columbus-Laurel.

Load-flow studies, which indicate when voltages drop below acceptable levels, were performed by MPC and reviewed by DNRC. These studies indicate that with the "A" line operating at 100-kV, most of the line outages that cause loss of service, and certainly the most serious service loss problems, occur in the Bridger-Red Lodge area.

Exhibit D of the Permit Application indicates which lines went out of service from July 1975, to May 1983, and the cause of those outages. The data contained in Exhibit D and supplemental information available since submission of the application (see Appendix C) all indicate that about 65 percent of line outages on the system occurred between Laurel and Red Lodge. Line outages do not necessarily mean loss of service to customers unless the remaining system cannot handle the required load. Thus, both transmission line problems and service losses are concentrated in the Laurel-Bridger-Red Lodge area.

COMMENT: An alternative solution which should be examined is the upgrading of the existing Laurel-to-Bridger 100-kV line. This line in the last 10 years has had minimal outages. The line could be upgraded to an even greater reliability by improvements and reconstruction. (landowner in letter 2)

RESPONSE: The intent of this comment is not clear. If the intent is to suggest that problems in the Laurel-Bridger-Red Lodge areas can be fixed by upgrading the "A" line to a higher voltage, it is incorrect. The power transfer capacity is sufficient to meet area loads unless there is an outage on the "A" line when the Mystic Lake generating plant is either out of service or operating below full capacity. Increasing

power transfer capacity will not provide reliability when an outage on the line causes loss of service. The draft EIS, pages 20 and 21, describe transmission alternatives evaluated by DNRC and MPC. The proposed line would solve the problems with the least cost of all the alternatives examined.

COMMENT: In table 2, page 19, it would be helpful to escalate benefit dollars to 1985 values so as to make them comparable with dollar costs of line shown in the Summary and in Appendix A. (MPC in letter 1)

RESPONSE: The values in table 2 do reflect benefits of the project in dollars at their 1985 value. There is a typographic error in the table heading; 1980 should be 1985.

COMMENT: The 60 to 65 year old portions of the loop from Red Lodge to Mystic Lake to Columbus to Laurel have severe outage problems that should be addressed by new construction. (landowner in letter 2)

RESPONSE: The material in Exhibit D of the application and the load-flow studies indicate that the only severe reliability problem on the 50-kV loop is in the Bridger-Red Lodge area. DNRC agrees that the Absarokee-Columbus side of the 50-kV loop may eventually need reinforcement as was stated on page 15 of the draft EIS.

COMMENT: What was the purpose of the Laurel to Bridger "A" line when it was originally built? (landowner in public meeting comment))

RESPONSE: The "Environmental Analysis of the Laurel to Bridger 100-kV Transmission Line," published by DNRC in August of 1973, indicates that the "A" line was built for three reasons: to increase power transfer capacity to the Bridger area, to increase reliability, and to maintain continuous service to customers in the Laurel-Bridger area during rebuilding of part of the 50-kV loop.

COMMENT: Did the Laurel to Bridger "A" line meet MPC's reliability criteria when it was first built? (landowner in public meeting comment)

RESPONSE: The "Environmental Analysis" referred to above does not directly address this issue, and MPC was not able to supply DNRC with this information. DNRC notes that lack of this information does not affect the analysis performed for the proposed line.

COMMENT: What options for increasing the reliability of the system by upgrading or rebuilding the 50-kV system were examined? (landowner in public comment meeting)

RESPONSE: This is discussed on page 20 of the draft EIS. Load-flow studies indicate that the proposed line would provide a solution to the system's immediate problems and cost less than other options.

COMMENT: What are the problems with the old 50-kV lines? Is it that they fail occasionally? (landowner in public meeting comment)

RESPONSE: The 50-kV loop does not currently suffer more failures than other transmission lines. The problem is that the 50-kV loop is part of a larger system, including the Mystic Lake power plant and Laurel-Bridger "A" line, and failure of one or more parts in the system prevents power being supplied to some customers served by the 50-kV line. During a failure on the east side of the loop, particularly if it is on the "A" line and Mystic Lake Dam is not in service, MPC is unable to transfer enough power around the west side of the loop to maintain adequate voltage on the east side of the loop. This is due to the limited power transfer capacity of the 50-kV loop.

COMMENT: Isn't it true that the real purpose of this line is to allow MPC to run a line from Bridger into Wyoming? (landowner in public meeting comment)

RESPONSE: MPC indicates it has no plans to extend the line south from Bridger and has not included such a line in its 1985 long-range plan filed with DNRC. MPC further states that it has not received requests from other parties for additional transmission connections in this area. Beartooth Electric Cooperative reports that it has plans to build a local distribution line in the Bridger-Belfry area but has no plans for major transmission lines in the area.

COMMENT: What additional transmission lines does MPC plan to build in this area? (landowner in public meeting comment)

RESPONSE: MPC indicates that it has definite plans for only one new line in the area, a 50-kV line from Laurel to Park City. This line would improve reliability in the Columbus area. Long-range plans filed by MPC indicate that a line with unknown specifications may be necessary at some time to supply the proposed chromium mine near Nye.

COMMENT: People in the Bridger area stand to gain the most from reliability while others in the system will help pay for that increased reliability. (landowner in public meeting comment)

RESPONSE: Everyone served by the loop will have increased reliability of service, but it is true that the benefits will be greater in the Red Lodge-Bridger area. MPC's rates are set for the entire service area and are based on MPC's investment in its entire system. The cost of building the "B" line, or of any alternative, will be paid by all MPC ratepayers. On the other hand, the rates paid by customers in the Bridger-Red Lodge-Absarokee-Columbus area are based on the cost of providing service to customers throughout the state. If measures are not taken to maintain reliable service in this area, customers here will be paying the same rates as customers in other parts of the state but receiving lower quality service.

COMMENT: Will rebuilding the pipeline to the Mystic Lake power plant solve the area problem, particularly the chance of outages on the Columbus side of the loop? (landowner in public meeting comment)

RESPONSE: This is difficult to assess. Problems arise with the pipeline that takes water to the powerplant because of its location on a steep, unstable hillside. It has been struck by falling rocks in the past and will almost certainly be struck by falling rocks in the future. The reconstruction of the pipeline has probably made major failures less likely in the future, but the degree of improvement is also difficult to assess. The generating plant is out of service because of scheduled, periodic maintenance and unscheduled equipment failures. The reliability record of the generating plant is comparable to the records of other generating facilities, and there probably is little room for cost-effective improvement in the plant's reliability.

COMMENT: What is the actual cost of past outages? (landowner in public meeting comment)

RESPONSE: DNRC did not survey households and businesses in the area to determine how people are affected by power failures because it would cost more than it would be worth. Surveys conducted to find the cost of power failures in other areas have found that the data obtained are not reliable, primarily because most power failures and their effects are quickly forgotten and only the most severe are remembered for any length of time.

DNRC estimated the loss of service that would result from transmission line outages based on outage data and load-flow studies. Using this information, DNRC estimated the costs to electric consumers of outages and added that to an assigned value for reduced uncertainty about future outages. This is discussed in Chapter Three, pages 16 through 20, of the draft EIS.

COMMENT: If a new 100-kV line is constructed along the MPC Proposed Route, there would be permanent and irreparable damage to property which we own in Carbon County. The current Laurel "A" line crosses only a corner of our property. The terrain is uniquely suited for our purposes which was the primary consideration in our purchase of the ground. Further encroachment would destroy the uses for which the ground was purchased. The use problems and concerns include: (1) potential biological effects to our breeding and raising of registered quarter horses; (2) test and sale of automatic weapons; (3) storage of agricultural explosives; (4) planned homesite; (5) subdivision potential; (6) resale value; (7) aesthetics; and (8) expansion of power line corridor. (landowner in letter 2)

RESPONSE: Site-specific land-use issues, including potential conflict with the automatic weapons testing site, storage sites for explosives and a planned homesite, are best addressed during centerline study when specific centerline options can be evaluated to determine what if any effect the proposed line would have on these uses. Centerline selection probably could keep the impacts of the new line on this landowner to a level no greater than those of the existing line.

COMMENT: Power transmission lines have a yet undetermined effect on mammals, based on information supplied by DNRC (Sheppard Report). Two 100-kV lines, therefore, have an unknown potential to affect our breeding and raising of registered quarter horses. What will be the potential for impacts from the line's electric field to horses and humans? (landowner in letter 2)

RESPONSE: The comment incorrectly implies that little is known about electric fields and their effect on humans and animals. An extensive body of literature exists and a large number of independent human health experts and associations like the World Health Organization are familiar with the effects that electric fields have on humans and animals. While effects from electric fields can be demonstrated at

high field levels (above 10-kV/m), scientific investigations have found no adverse health effects to human or animals at electric field strength levels below 10-kV/m.

The electrical fields associated with each of two parallel transmission lines could either reinforce or weaken each other, depending on how the current flow is phased. MPC has indicated that it would build and operate the proposed Laurel-Bridger "B" line so that the alternating current phase in the two lines would cause a electrical field of 0.6 kV/m in the area between the two lines and 0.7 kV/m at the right-of-way edge. The relative electric field strengths that would result for a single line and two parallel lines are shown in Appendix D.

The maximum electrical field strength to which a human or domestic animal would be exposed under the parallel lines is about 0.7 kV/m which is well below the electrical field strength standard adopted by the Board of Natural Resources and Conservation in its rules implementing the Major Facility Siting Act.

The Board, after a formal administrative hearing, adopted a maximum field strength standard of 1 kilovolt per meter (kV/m) at the right-of-way edge. This standard is considered sufficient to prevent biological hazards, and provide an adequate margin of safety. The maximum field strength of the new line and the existing line together would be well below the standard everywhere within the right-of-way.

COMMENT: On the preferred route both the potential for subdivision of our ground and the resale value of our property would be dramatically reduced or destroyed with the addition of a second power line. (landowner in letter 2)

RESPONSE: The degree to which transmission lines affect land values and potential land uses such as subdivisions, is uncertain. Literature on the effect that transmission lines may have is inconclusive. These issues should be negotiated by landowners and MPC during the easement acquisition process.

COMMENT: A second line along the Proposed Route would be aesthetically repugnant during our daily use of the ground. (landowner in letter 2)

RESPONSE: DNRC recognizes that MPC's Proposed Route will burden the same set of landowners with another transmission line and could contribute to increased visual impact for those landowners. DNRC's analysis indicates that MPC's Proposed Route would cause less cumulative environmental impact than any alternative route.

COMMENT: We did not purchase property crossed by the Proposed Route so that it could become a power line corridor with a new line every ten years. (landowner in letter 2)

RESPONSE: The proposed route for the Laurel to Bridger "B" line would primarily cross rangeland. Such a location minimizes the potential for interference with agricultural operations and current land uses. This location also reduces the potential for impacts associated with access roads. DNRC is aware of the planned homesite and other uses in the Cottonwood Creek area which will require detailed analysis before a centerline is approved by the Board.

COMMENT: Even when crossing cultivated fields, H-frame construction may be preferred because of the substantially longer spans they allow. It would be safer to replace the word "would" with "may" on page 7, second paragraph. (MPC in letter 1)

RESPONSE: DNRC agrees. In specific locations where a longer span would allow for structure locations which avoid cultivated land, the use of H-frame structures should be considered.

COMMENT: The statements on page 29, fourth paragraph, are not quite correct and would be more accurate if reworded as follows:

When no other economical siting option is available, use of single-pole structures and location of these structures along ~~existing~~ fence lines or roads ~~as suggested by MPC~~, if such exist, would minimize impacts; where no natural barriers exist, longer spans on H-frames may be best. (MPC in letter 1)

RESPONSE: H-frame structures would be preferable if their use made it possible to span cultivated areas. Also see response above.

COMMENT: Page 29, third paragraph, needs to be put in perspective by a reference to the statement on page ii of the Summary that "...four of the "A" line structures are located on cultivated land, and it is likely that about the same number of structures would be required on cultivated land for the proposed new line." (MPC in letter 1)

RESPONSE: DNRC disagrees. This discussion is describing the potential impact of transmission line structures located on cultivated land. Descriptions of impacts associated with specific routes are contained in Chapter 5.

COMMENT: We expect locked gates and permanent fencing to do more than "reduce" trespass. On page 29, paragraph five, should be reworded as follows:

Most trespass problems can be ~~reduced~~ prevented by installing locked gates or replacing construction gates with permanent fencing. Padlock arrangements can be worked out with landowners, or if landowner prefers, the gate will be replaced with permanent fencing. (MPC in letter 1)

RESPONSE: The distinction between reducing trespass and preventing most trespass is largely semantic. Unauthorized use of access developed for the transmission line is difficult to eliminate and is a secondary impact of the project. However, MPC's approach to this problem is a sound one and gives the landowner the choice.

COMMENT: The first paragraph on page 30 could be shortened and improved by replacing it with a single sentence such as: Impacts to rangeland are expected to be insignificant. (MPC in letter 1)

RESPONSE: Although the impacts would be small, DNRC is required to discuss them in the EIS. While less sensitive to impacts than cultivated land, rangeland will still experience impacts such as temporary loss of forage production on the surface of access roads. Rangeland construction requires conscientious installation and operation of gates to prevent livestock and trespass problems for the landowner. Also, weed proliferation at disturbed sites could be prevented only by an aggressively administered reclamation program. It is expected that compliance with DNRC's Standard Environmental Specifications will reduce the level of potential impacts to rangeland.

COMMENT: It should also be noted on page 44, paragraph 3, that the uplands route crosses more cultivated land than the Applicant's Preferred Route. (MPC in letter 1)

RESPONSE: DNRC agrees. The Uplands Route crosses approximately 0.3 miles of cultivated land which would not be crossed by the Applicant's Proposed Route. This information is also contained in table 4, page 40 of the draft EIS.

ROUTES

COMMENT: Is the River Route the same as the Valley Route? (MPC in letter 1)

RESPONSE: Yes. The route is referred to as the Valley Route in figure 1 and the River Route in the text of Chapter Five.

COMMENT: The Railroad Route is unacceptable to me for three reasons: (1) it would have to be routed within a few hundred yards of my home; (2) a derailment would possibly put the line out of service; and (3) sometime in the future the highway between Laurel and Silesia will have to be widened or replaced and the power line would interfere with that construction. (landowner)

RESPONSE: The Railroad Route is situated along the Clarks Fork and passes close to human settlement in several areas.

Structural damage to the power line caused by a car leaving the pavement or a train derailment and the electrical outage that might result is generally of less concern than the hazard to human safety presented by the structures themselves in such an accident.

The annual average daily traffic count along U.S. Route 212 between Laurel and Rockvale increased about 14 percent in the 10-year period ending in 1984, from 3,770 to 4,280 vehicles per day. Although the present road width is sufficient to handle the growth in traffic flow expected in the next decade, the Montana Department of Highways plans to widen the road by at least 4 feet sometime in the future. However, this road improvement would not necessarily affect a power line which shared the road right-of-way, depending on the final centerline location.

COMMENT: The Railroad and Highway routes are superior, if construction of a second 100-kV line is mandated, due to the advantages in construction, ease of maintenance, ease of repair, reduction in vandalism, and the reduced likelihood of parallel lines being taken down simultaneously by the same cause. (landowner)

RESPONSE: DNRC considers the Railroad and River (Valley) routes to be inferior to either the Uplands or Applicant's Proposed Route for the following reasons:

Putting the transmission line into the railroad and highway right-of-way would move the line closer to a significantly greater number of residences. Use of the right-of-way is also questionable since there are many wet areas that would make construction difficult. If the line had to be located outside of the right-of-way because of highway or railroad safety concerns, areas of cultivated and irrigated land would be crossed, increasing agricultural impacts.

Wet areas along the right-of-way would likely require more expense to initially design structures, protect any structures located there, and to repair structures if they should fail. In wet areas, a continuous access road along the right-of-way may not be possible without additional cost. In comparison, access roads or trails that now serve the "A" line could be used for the proposed line, avoiding many impacts.

Vandalism and natural acts such as lightning strikes and landslides are unpredictable events. No definitive statement can be made whether it is better for reliability to construct the proposed line miles away from or side by side with the existing line.

HISTORICAL, ARCHAEOLOGICAL, AND PALEONTOLOGICAL CONCERNS

COMMENT: On page 35, fourth paragraph, the first sentence contradicts the last sentence, and is incorrect. Few archaeological sites derive significance from the visual quality of their settings. Suggested changes to that paragraph follow:

Because no archaeological sites are known to occur in the study area, route comparison has been based upon present knowledge of historic sites. Potential impacts to historical ~~and archaeological~~ resources for this project would be primarily visual. The greatest potential for impacts of this nature would be from routes in the bottom of the Clarks Fork valley, where most of the historical sites are located. Impacts to known historical resources would be mostly avoided by use

of the Applicant's Proposed Route. Potential impacts to ~~these~~ archaeological and paleontological resources include destruction or loss of information available from artifacts, fossils, or other materials ~~from any sites discovered during construction~~ (this sentence moved from end of paragraph). The likelihood that line and access road construction would affect any paleontological resources is low. Because impacts to most archaeological resources for this project can be negated or mitigated by data retrieval or avoidance, the impacts are best assessed at centerline selection. (MPC in letter 1)

RESPONSE: The suggested changes are accepted since they do clarify the potential for impact to historical, archaeological and paleontological resources. This change does not affect the ranking of the routes that is presented in Chapter Five of the draft EIS.

COMMENT: The beginning statement on page 36, second paragraph, discusses mitigation of potential paleontological impacts. The paleontology report submitted with the application states that "The only Cretaceous formation which has much potential for significant vertebrate fossil sites is the Judith River Formation which contains abundant dinosaur and small mammal fossils in other parts of the region." Therefore, MPC suggests the following change to the first sentence.

During centerline study, any rock outcrops with potential for paleontological significance (Judith River formation) should be identified. (MPC in letter 1)

RESPONSE: DNRC disagrees that there is no potential for discovery of paleontological resources in other formations of the Cretaceous group. The paleontology report submitted with MPC's application identifies a number of major formations which can contain paleontological resources including mammals, reptiles, and fish. For example, Mowry Shale has a moderate potential to yield reptile and fish fossils and if found those fossils could be of moderate

paleontological importance. About 10 miles of the Applicant's Proposed Route would cross the Mowry Shale Formation. Other potential fossil-yielding formations are also crossed by the Applicant's Proposed Route. These formations have a low probability of yielding fossils but if vertebrate fossils were found they would be of moderate paleontological importance.

Construction of the transmission line is not expected to affect paleontological resources unless rock outcrops containing fossils are destroyed during construction. During centerline analysis, DNRC recommends the identification of any rock outcrops that are likely to be damaged. If these rock outcrops are to be disturbed by construction activities along the approved centerline they should be examined by a paleontologist prior to construction and pertinent data collected and recorded. This recommendation is consistent with the MPC paleontology report and DNRC's proposed Environmental Specifications (see Appendix B, draft EIS).

COMMENT: MPC disagrees with statements made in the first paragraph on page 44 since a predictive model for archaeological sites was not prepared. The lack of known sites is probably due to a lack of archaeological survey work in the study area. MPC suggests the following changes.

The Proposed Route would have the least impact on historical sites, with a low possibility that any significant ~~archaeological or~~ paleontological sites would be encountered. (MPC in letter 1)

RESPONSE: DNRC agrees there is potential for discovery of archaeological resources during centerline study. An archaeological survey within the approved route at the time of centerline study will be necessary to comply with DNRC's proposed Environmental Specifications (see Appendix B, draft EIS), and the centerline application requirements of the Siting Act rules.

COMMENT: Only the vulnerability to visual impacts was estimated for historic sites by MPC. Site-specific analysis will be conducted during centerline selection, when the potential for avoiding or reducing impacts can be assessed. Therefore, the following changes are suggested on page 45, paragraph five.

Three historic sites eligible for listing on the National Register of Historic Places might ~~would~~ be visually impacted with limited opportunity for avoiding or reducing these impacts. (MPC in letter 1)

RESPONSE: Comment noted.

CONSTRUCTION CONCERNS

COMMENT: The first paragraph on page 33 implies much more road building than is the actual case. Changes in two sentences in that paragraph will convey a more accurate description of what takes place. The following are suggested revisions for sentences four and five of that paragraph:

Excavation for tower sites or roads may require grading. ~~where sideslopes are more than four percent.~~ The amount of grading will depend on ~~the location of the access roads, structures, and the equipment a contractor will use, and may not be required on level ground or gentle slopes if existing roads are available~~ vegetation, slope, the location of existing access roads, structure placement and the equipment used by the contractor. (MPC in letter 1)

RESPONSE: DNRC agrees in part. The suggested change would shorten the paragraph. It does not affect the analysis presented in the draft EIS since DNRC took these factors into consideration when comparing access requirements for the various routes.

COMMENT: In the discussion of construction concerns for the railroad route on page 46, second paragraph and sentence, curves taken by the railroad are mentioned. The curves referred to would necessitate additional support for structures and heavy-duty components. Therefore, the "or" should be changed to "and." (MPC in letter 1)

RESPONSE: Neither MPC or DNRC knows for certain that both guying and heavier components would be necessary. Wide-radius curves might require one or the other or neither.

COMMENT: On page 46, paragraph 5, problems with locating the transmission line in the railroad right-of-way are discussed. Burlington Northern discourages construction of transmission lines in its right-of-way for several reasons. The attached April 23, 1979, letter from Burlington Northern to MPC's Herbert Atkinson expands on this further. (MPC in letter 1)

RESPONSE: Mr. Atkinson's letter is included with MPC's comments, which are reproduced in Appendix B. DNRC is aware that potential conflicts with railroad operations might require locations outside of the right-of-way in highway borrow pit areas, in cropland east of the railroad, or nearer the Clarks Fork, which would contribute to adverse impacts along the highway and railroad routes (see pages 45-48, draft EIS). The opportunity for satisfactory mitigation on these routes is much less than for the Uplands Route and Applicant's Proposed Route.

TAX BENEFITS AND POPULATION

COMMENT: The second paragraph on page 31 should be reworded and the conclusion changed. Tax revenues will be "noticeable," but that can be left up to the reader to decide.

If this line were in place in tax year 1984-1985, the property tax revenue from the line and substation additions would exceed $46,000 per year. Over a 60-year period these revenues would total more than $2.7 million. (MPC in letter 1)

RESPONSE: As stated on page 31 the project would generate property tax revenues. The actual tax revenues generated would depend on the local mill levies assessed by the respective taxing jurisdictions. Also, see next comment and response.

COMMENT: On page 42, paragraph 5, the short-term economic effects (positive and negative) are negligible for all routes; the long-term benefits (taxes) are significant. The following changes are suggested:

Short-term economic effects are ~~virtually the same~~ negligible for all routes. MPC's total tax payment and the resulting tax benefits to the local tax jurisdictions will be sizeable over the life of the line and would vary only slightly among routes. (MPC in letter 1)

RESPONSE: These changes do not affect DNRC's overall analysis of the routes.

COMMENT: Tax receipts for this facility may differ from those predicted, and the change may be either up or down from the predicted values presented in Appendix A. The following changes to page 51 are suggested:

The following tables present summary information regarding ~~possible~~ expected tax ~~benefits~~ revenues from the Laurel to Bridger project. These figures were calculated from data supplied in MPC's application. It should be noted that this facility is likely to last sixty or more years and that taxable values of transmission lines are subject to adjustment based on values of utility stock and profits. Property tax ~~benefits~~ revenues resulting from project development may be higher or lower than estimated. (MPC in letter 1)

RESPONSE: Comment noted.

COMMENT: MPC's estimate of property tax revenues are quite different than those shown in table 5, page 59. According to figures from the Montana Tax Foundation, property taxes (millage rates) imposed by School DistrictS for 1984-1985 revenue are as follows:

District	County Levy	School Levy	State Levy	Special Levies	Total Levy
Laurel (R) 7	60.27	149.35	6.00	-	215.62
Edgar 33	53.27	164.69	6.00	5.02	229.26
Fromberg (R) 30	53.55	129.05	6.00	2.66	191.26
Bridger (R) 2	53.55	129.05	6.00	2.66	191.26

Using these millage figures to estimate approximate revenues from the facility (based upon taxable valuation shown in table 3 of Appendix A) implies an increase of about $46,000 in total tax revenue for the Applicant's Proposed Route, or a figure about 38 percent above that shown in table 5. (MPC in letter 1)

RESPONSE: DNRC's analysis of tax revenues focuses only on general city, county and local school district levies. MPC's tax analysis also includes tax revenues accruing to special purpose taxing jurisdictions and the state university system. Another possible explanation for differences between the MPC and DNRC estimates of project tax benefits may be differences in the conversion factor used to convert the market value of MPC taxable property to an estimate of assessed value. DNRC estimated assessed value at 70 percent of market value; the same rate as used in MPC's project application.

COMMENT: The draft EIS mentions that population growth may be experienced by this area in the future, and that ventures like the proposed Stillwater Mining Company project could affect the need for power in the region. With that in mind, have estimates been prepared regarding the potential number of households which could be served by the new transmission project or the ability to serve projects like the Stillwater Mining Company in the future? I am not sure what the capacity of the new transmission project will be and wonder how that fits in with anticipated demand. (Local government in letter 6)

RESPONSE: Neither MPC nor DNRC has estimated the potential number of households to be served. MPC projects the consumption of electricity in the area to be growing at 6.7 percent per year based on data from 1972-1983. MPC also projects the available load capacity in the Laurel-Bridger-Red Lodge area to be sufficient until sometime after 1990.

The major purpose of the Laurel-Bridger line is to improve the reliability of the present transmission sytem under certain outage conditions. The draft EIS indicates that another line may be necessary sometime in the future to provide voltage support to the Absarokee-Columbus side of this system and also serve additional loads such as the projects proposed by the Stillwater Mining Company.

MPC has indicated that it plans to file an application for a new transmission line to provide service to the Stillwater mine and to reinforce the west side of the loop in 1986. The size of this line will depend on the plans of the Stillwater Mining Company. The Montana Department of State Lands and U.S. Forest Service recently prepared a draft EIS on this project under the Montana Hard Rock Mining Act and the Montana Environmental Policy Act. Details about the mine may be obtained from that EIS, available from either of the above agencies.

CHAPTER FIVE
FINAL CONCLUSIONS AND RECOMMENDATIONS

The draft EIS contained DNRC's preliminary conclusions, proposed recommendations to the Board, and suggested measures to reduce impacts of the project. The recommendations were presented as a means of obtaining comment on DNRC's proposed action. Comments on the draft did not cause DNRC to substantially change its preliminary conclusions and recommendations. Changes to the preliminary recommendations are shown by a line through the word or words to be changed. New language or recommendations are underlined.

These final recommendations are based on the information and public comment available to DNRC at the time of preparation of the final EIS. The Board is responsible for approving or denying this project and does not necessarily have to follow DNRC's recommendations.

CONCLUSIONS

1. Operation of the 50-kV system in the Laurel-Bridger-Red Lodge-Columbus area does not meet MPC's reliability criteria.

2. The proposed project, along with upgrading of an existing line from 50-kV to 100-kV, and the construction of a new substation near Bridger, would provide the reinforcement necessary to satisfy MPC's reliability criteria.

In the long run, it may be necesary to provide voltage support to the Absarokee-Columbus side of the 50-kV loop. However, neither MPC or DNRC could identify a single line that would serve the electrical needs of the entire 50-kV loop from Laurel through Bridger, Red Lodge, and Absarokee to Columbus.

3. The benefits from reduced outages to electric consumers served by the 50-kV system are reasonably likely to exceed the costs of the proposed project.

The calculated benefits of the proposed line were reduced on the basis of information available after publication of the draft EIS, but are still reasonably likely to exceed the costs of the project.

4. The expected net present value of costs for the proposed facility is less than those of other alternatives that could solve the area's electrical problems.

Load-flow studies and other information indicate that the proposed line will address the area's immediate electrical problems at the least cost.

5. Reasonable alternative locations for siting the transmission line were considered.

6. The facility, constructed along either the Applicant's Proposed Route or the Uplands Route, would not cause major adverse or unmitigable social, economic, natural, or physical environmental impacts if the mitigation measures identified in Appendix B are adopted. (See also conclusion 7.)

7. Construction of the facility along MPC's Proposed Route would cause the least cumulative environmental impact at less economic cost than other reasonable alternatives. This route provides the best balance of factors to be considered using the ~~Board's~~ preferred route criteria listed in administrative rules adopted by the Board for the Siting Act (March 1985).

Based upon the public comments made at two meetings held in the area and on the draft EIS, DNRC believes that the Proposed Route has general public acceptance. Specific land-use concerns raised by landowners living along this route are best addressed during centerline analysis.

8. The facility would not cross any designated national wilderness or primitive area.

9. MPC's proposed project can be constructed to ~~minimize risk to~~ comply with Board standards designed to protect public health and safety from electrical noise, electric fields, or other electrical problems such as shocks and radio and television interference.

10. ~~The route proposed by MPC is wide enough to locate a centerline.~~ A route 1 mile wide centered on the existing Laurel-Bridger "A" line would be wide enough to allow location of a low impact centerline. This is less than the 2-mile-wide route applied for by MPC.

11. DNRC consultation with State Aeronautics and Federal Aviation Administration (FAA) ~~FAA~~ during centerline analysis will be required to determine what markings if any are required for pilot safety at crossings of streams and valleys.

12. DNRC concludes that placing the line underground would not be an economically practical method for reducing potential impacts of the project.

RECOMMENDATIONS

1. The Board should grant a Certificate of Environmental Compatibility and Public Need to MPC for construction of the Laurel to Bridger 100-kV transmission line.

2. The proposed project should be built on MPC's Preferred Route.

3. The Board should approve a 1-mile-wide route to be further studied for location of a final centerline. Also see recommendation 5.

~~3~~4. The Board, in approving any route, should attach requirements for reducing or avoiding impacts, including erosion, sedimentation, weeds, and impacts to wildlife, visual, historical, and archaeological resources. These measures are included in DNRC's ~~Transmission Line Construction~~ proposed Environmental Specifications, Appendix B, of the draft EIS.

~~4~~5. MPC should apply for and the Board should approve a final centerline within the selected route before construction begins, following the process and schedule delay in the recently adopted administrative rules and legislative changes to the Siting Act. At the time of route certification, work could begin to install additional equipment required at the Laurel-to-Bridger automatic substations.

56. MPC and DNRC should develop a program for monitoring construction to be submitted for Board consideration at the time of centerline approval.

APPENDIX A

DETERMINATION OF THE LAUREL-BRIDGER 100-kV TRANSMISSION PROJECT'S COMPLIANCE WITH THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES' STATUTES

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TED SCHWINDEN, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

(406)444-3948

HELENA, MONTANA 59620

June 21, 1985

Department of Natural Resources
and Conservation
Attn: Larry Fasbender, Director
32 S. Ewing
Helena, MT 59601

Dear Larry:

The Department of Health and Environmental Sciences (DHES) reviewed the Montana Power Company's (MPC) proposed construction, operation and maintenance of a 100-kV transmission line between Laurel and Bridger, Montana. The preliminary determination of the DHES was that the proposed project complies with the environmental health aspects of the Major Facility Siting Act. The department published legal advertisements in the Laurel and Bridger area newspapers requesting public review of this preliminary determination. The DHES did not receive any comments in the 30-day review period.

The DHES would like to make two comments pertaining to this proposal.

Water Quality

The proposed project, as planned, does not require discharge permits or short-term authorizations to exceed Montana water quality standards. If unforeseen circumstances occur during construction that result in discharges or short-term violations of water quality standards, the necessary permits and authorizations must be obtained from the DHES before the discharges or violations occur.

Solid Waste

All solid wastes generated by the project must be disposed of at licensed Class II landfills according to the requirements of the Montana Solid Waste Management Act and ARM 16.14.501 et. seq. Additionally, any hazardous wastes generated must be disposed of in accordance with ARM 16.44.101 et. seq.

The review concluded that this project is in compliance with the substantive requirements of the statutes which are administered by the DHES in conjunction with the Montana Major Facility Siting Act.

Sincerely,

John J. Drynan, M.D.
Director

JJD/TME/jg

APPENDIX B
CORRESPONDENCE ON THE DRAFT EIS

LETTER No. 1

MONTANA POWER COMPANY mpc GENERAL OFFICES: 40 EAST BROADWAY, BUTTE, MONTANA 59701 • TELEPHONE (406) 723-5421

June 28, 1985

Mr. Kevin Hart
Project Manager, Energy Division
Department of Natural Resources
and Conservation
32 South Ewing
Helena, MT 59620

Dear Kevin:

The Engineering and Environmental Departments' staff of The Montana Power Company have reviewed the Department's Draft Environmental Impact Statement (DEIS) on the Laurel to Bridger 100 kV Transmission Project. Our review does not include the material in Appendix B or the need analysis done by the Department.

Most of our comments are minor corrections or suggested word changes. All comments, explanations and minor word changes should be in italic; where changes are suggested in entire sentences, standard type is used with suggested deletions lined-out and additions underlined.

All reviewers felt that this DEIS is a substantial improvement over past efforts. This reaction is not so much due to the Department reaching conclusions similar to MPC, as it is due to improved structuring of the material and an adherence to clear categories of impacts used for route comparisons.

We will probably draft a second letter to address a few additional questions which deal with the application and review process as it applies to future projects. The enclosed comments are those specific to the Laurel - Bridger DEIS.

Sincerely,

O. P. Rice

O. P. Rice, Manager
Electrical Engineering

OPR/tlmw

Enclosures

cc: E. Braun
G. McWhorter
W. Johnson
J. Falvey

170162

The Montana Power Company

Comments on the Laurel - Bridger DEIS

Page i, Paragraph 3, Sentence 2

Substations at Laurel and Bridger are denoted as "automatic" substations. This notation is awkward. Common nomenclature is "auto" substation because they contain autotransformers.

Page 3, Paragraph 3, Sentence 2

The term "individual contacts" would benefit from some description of how the individuals were contacted; for example, were these contacts purely chance encounters or the result of a predesigned survey?

Page 5, Paragraph 1, Sentence 3 and 4

The reason for the deterioration of voltage levels is load growth, which may be due to more than population growth - population growth is merely one factor. MPC has experienced load growth of 6.7 percent per year in the study area as stated on Page 14 (revised 12/84) of the Application.

This condition is likely to get worse because of expected ~~population~~ load growth in the area. ~~Carbon County experienced 14 percent population growth between 1970 and 1980.~~ MPC calculations based on experience through 1983 show an annual growth rate of approximately 6.7 percent for the study area.

Page 7 Paragraph 2, Sentence 2

Even when crossing cultivated fields, H-frame construction may be preferred because of the substantially longer spans they allow. It would be safer to replace the word "would" with "may."

Page 8, Figure 3 and Page 9, Figure 4

These drawings are misleading. The main problem is that the reader concludes from Figure 3 that roads are cut along the line as a general practice, even across level ground. This may lead to greatly elevated levels of expected impacts on the part of landowners. This distortion serves no one, least of all the landowners along the route. The lead crew

(Figure 3) is not installing foundations but is drilling holes. Foundations are not used for wood pole structures.

Page 10, Paragraph 5, Sentence 1

This sentence states that construction will take about nine weeks. This conflicts with figures on Page 30 and with estimates provided in the permit application.

Page 19, Table 2

In Table 2, it would be helpful to escalate benefit dollars to 1985 values so as to make them comparable with dollar costs of line shown in the Summary and in Appendix A.

Page 28, Paragraph 2, Sentence 2

MPC does not intend to follow such a practice for all fences crossed. This will be handled on a case-by-case basis with remedial action taken where warranted.

Page 29, Paragraph 3

This paragraph needs to be put in perspective by a reference to the statement on Page ii of the Summary that "...four of the 'A' line structures are located on cultivated land, and it is likely that about the same number of structures would be required on cultivated land for the proposed new line."

Page 29, Paragraph 4, Sentence 2

This is not quite correct and would be more accurate if reworded as follows:

When no other economical siting option is available, use of single-pole structures and location of these structures along ~~existing~~ fence lines or roads ~~as suggested by MPC~~, if such exist, would minimize impacts; where no natural barriers exist, longer spans on H-frames may be best.

Page 29, Paragraph 5, Sentence 3

We expect locked gates and permanent fencing to do more than "reduce" trespass:

Most trespass problems can be ~~reduced~~ prevented by installing locked gates or replacing construction gates with permanent fencing. Padlock arrangements can be worked out with

landowners, or if the landowner prefers, the gate will be replaced with permanent fencing.

Page 30, Paragraph 1

The first paragraph could be shortened and improved by replacing it with a single sentence such as: Impacts to rangeland are expected to be insignificant.

Page 30, Paragraph 2

This sentence should be omitted. The new substation is not part of the permit application.

Page 31, Paragraph 2

The second paragraph should be reworded and the conclusion changed. Tax revenues will be "noticeable," but that can be left up to the reader to decide.

If this line was in place in tax year 1984-1985, the property tax revenue from the line and substation additions would exceed $46,000 per year. Over a 60-year period these revenues would total more than $2.7 million.

Page 31, Paragraph 3, and Page 32, Table 3

The third paragraph refers to noxious weeds in the two counties and Table 3 refers to noxious weeds in the study area. The more important question is: Are there noxious weeds in the alternative routes?

Page 33, Paragraph 1

The first paragraph implies much more road building than is the actual case. Changes in two sentences in that paragraph will convey a more accurate description of what takes place. The following are suggested revisions for sentences four and five of that paragraph:

Excavation for tower sites or roads may require grading. ~~where sideslopes are more than four percent~~. The amount of grading will depend on ~~the location of the access roads, structures, and the equipment a contractor will use, and may not be required on level ground or gentle slopes if existing roads are available~~ vegetation, slope, the location of existing access roads, structure placement and the equipment used by the contractor.

Page 35, Paragraph 4

The first sentence contradicts the last sentence, and is incorrect. Few archaeological sites derive significance from the visual quality of their settings.

Because no archaeological sites are known to occur in the study area, route comparison has been based upon present knowledge of historic sites. Potential impacts to historical ~~and archaeological~~ resources for this project would be primarily visual. The greatest potential for impacts of this nature would be from routes in the bottom of the Clarks Fork valley, where most of the historical sites are located. Impacts to known historical resources would be mostly avoided by use of the Applicant's proposed route. Potential impacts to ~~these~~ archaeological and paleontological resources include destruction or loss of information available from artifacts, fossils, or other materials ~~from any sites discovered during construction~~ [this sentence moved from end of paragraph]. The likelihood that line and access road construction would affect any paleontological resources is low. Because impacts to most archaeological resources for this project can be negated or mitigated by data retrieval or avoidance, the impacts are best assessed at centerline selection.

Page 36, Paragraph 2, Sentence 1

The paleontology report submitted with the application states that "The only Cretaceous formation which has much potential for significant vertebrate fossil sites is the Judith River Formation which contains abundant dinosaur and small mammal fossils in other parts of the region."

During centerline study, any rock outcrops with potential for paleontological significance (Judith River formation) should be identified.

Page 36, Paragraph 3, Sentence 2

Impacts referred to are potential impacts; therefore, "potential" should be inserted before the word "impacts."

Page 40, Table 4

What do the various bracket forms and three enclosed numbers signify?

Page 41, Paragraph 3

Is the River Route the same as the Valley Route?

Page 42, Paragraph 5, Sentences 2 and 3

The short-term economic effects (positive and negative) are negligible for all routes; the long-term benefits (taxes) are significant.

Short-term economic effects are ~~virtually the same~~ negligible for all routes. MPC's total tax payment and the resulting tax benefits to the local tax jurisdictions will be sizeable over the life of the line and would vary only slightly among routes. (See Appendix A)

Page 44, Paragraph 1

A predictive model for archaeological sites was not prepared. The lack of known sites is probably due to a lack of archaeological survey work in the study area.

The proposed route would have the least impact on historical sites, with a low possibility that any significant ~~archaeological or~~ paleontological sites would be encountered.

Page 44, Paragraph 3

It should also be noted that the uplands route crosses more cultivated land than the Applicant's preferred route.

Page 45, Paragraph 5

The vulnerability to visual impacts was estimated for these sites. Site-specific analysis will be conducted during centerline selection, when the potential for avoiding or reducing impacts can be assessed.

Three historic sites eligible for listing on the National Register of Historic Places might ~~would~~ be visually impacted with limited opportunity for avoiding or reducing these impacts.

Page 46, Paragraph 3, Sentence 2

The curves referred to would necessitate additional support for structures and heavy-duty components. Therefore, the "or" should be changed to "and."

Page 46, Paragraph 5, Sentence 1

Burlington Northern discourages construction of transmission lines in its right-of-way for several reasons. The attached

April 23, 1979 letter from Burlington Northern to MPC's Herbert Atkinson expands on this further.

Page 57, Paragraph 1

Tax receipts for this facility may differ from those predicted, and the change may be either up or down from the predicted values presented in Appendix A.

The following tables present summary information regarding ~~possible~~ expected tax ~~benefits~~ revenues from the Laurel to Bridger project. These figures were calculated from data supplied in MPC's application. It should be noted that this facility is likely to last sixty or more years and that taxable values of transmission lines are subject to adjustment based on values of utility stock and profits. Property tax ~~benefits~~ revenues resulting from project development may be higher or lower than estimated.

Page 59, Table 5

MPC's estimate of property tax revenues are quite different than those shown in Table 5. According to figures from the Montana Tax Foundation, property taxes (millage rates) imposed by School District for 1984-1985 revenue are as follows:

District	*County Levy*	*School Levy*	*State Levy*	*Special Levies*	*Total Levy*
Laurel (R) 7	*60.27*	*149.35*	*6.00*	*-*	*215.62*
Edgar 33	*53.27*	*164.69*	*6.00*	*5.02*	*229.26*
Fromberg (R) 30	*53.55*	*129.05*	*6.00*	*2.66*	*191.26*
Bridger (R) 2	*53.55*	*129.05*	*6.00*	*2.66*	*191.26*

Using these millage figures to estimate approximate revenues from the facility (based upon taxable valuation shown in Table 3 of Appendix A) implies an increase of about $46,000 in total tax revenue for the Applicant's preferred route, or a figure about 38 percent above that shown in Table 5.

180307

BURLINGTON NORTHERN

INDUSTRIAL DEVELOPMENT AND
PROPERTY MANAGEMENT DEPARTMENT

Room 1018
176 East Fifth Street
St. Paul, Minnesota 55101
Telephone (612) 298-2121

April 23, 1979

Mr. Herbert P. Atkinson
Right-of-Way and Permit Coordinator
Montana Power Company
40 East Broadway
Butte, Montana 59701

Dear Mr. Atkinson:

This will acknowledge your letter of April 11, 1979 with reference to proposed 50 KV transmission line in the Bozeman-Belgrade area and the 12-inch water line between Missoula and East Missoula, Montana.

In our letter of April 6, 1979 we requested "... that Montana Power Company secure a route other than Burlington Northern right of way for the proposed lines." We could consider issuing our standard form permit for a properly engineered crossing of our right of way to the extent reasonably necessary but we cannot allow parallel occupancy.

Some of the more obvious reasons, not necessarily in order of importance, are noted as follows:

1. Physical interference with rail operations including normal and emergency maintenance, derailment activities and track additions and relocations. These activities require the use of rail mounted cranes, derricks and large trucks which are impeded by the presence of power lines and towers.

2. Physical interference with normal rail operations caused by construction and maintenance activities of the utility company.

3. Electrical interference, both electromagnetic and electrostatic. Such interference includes noise and service interruptions on railroad voice and data circuits, induced currents into railroad signal circuits, both in the track rails and in the wires or cables on pole lines of sufficient magnitude so as to cause false operation of wayside signals; and electrical interference is a potential shock hazard to railroad employees, resulting in electrocution or secondary injuries from falls.

4. Potential liability problems connected with the above and with inadvertent railroad damage to transmission lines and towers. In this regard, a single derailment has the energy potential to knock down one or more towers, totally disabling the power line and exposing persons and property to high voltage power lines.

5. Interference with future additional operating trackage for side tracks for various uses. Operational and topographical considerations often dictate the location for new trackage which could encounter substantial interference from parallel transmission lines and towers.

6. Clearance problems in connection with the location and servicing of industries along our trackage and the location of turnouts.

7. Reluctance of many industries to locate under or near high voltage transmission lines. Many industries object for some of the same reasons we do. Rail transportation serves heavy industries who use cranes and other heavy equipment in their operations. In this regard, it is not even a question of the actual risk or impairment but of perceived risk or impairment. Experience demonstrates that industries do resist such locations.

For these reasons, we respectfully request that you find an alternate route for the utility which does not parallel our right-of-way.

Very truly yours,

A. W. Grauel
General Manager Leases

P. O. Box 64
Edgar, Montana 59026
June 28, 1985

Kevin Hart, Project Manager
Energy Division
Department of Natural Resources and Conservation
32 South Ewing
Helena, Montana 59620

Dear Mr. Hart:

This letter is to register our formal opposition to the construction of the proposed Laurel to Bridger 100-kV transmission line. Our opposition is based upon inspection of the Permit Application and the preliminary Environmental Impact Statement and upon attendance at the Department of Natural Resources and Conservation (DNRC) conducted public hearings in December 1984 and June 1985. This opposition is based first on our conclusions that Montana Power Company (MPC) has not demonstrated a need for the new power line. Secondly, outage problems exist on the older Red Lodge-Mystic-Columbus-Laurel section of the loop which should have a priority over the Laurel to Bridger line for solution. Thirdly, the preferred route for the proposed Laurel to Bridger transmission line would likely cross our real property in Carbon County causing permanent and irreparable damage to the property and making it unsuitable for the purposes for which the ground was purchased. Finally, we believe that the preferred route is not the best route and that the railroad or highway routes would be superior.

Opposition to Statement of Need

Population growth from 1960 to 1980 was 4.0% (from Table 2.3-1 of the Permit Application Volume 1). This includes a population decrease of 12.4% from 1960 to 1970 and a population increase of 18.6% from 1970 to 1980. We suggest that due to the economic slowdown of the last 5 years that the growth for the period 1980 to 1990 will be quite small. The area has already demonstrated the potential for a reduction in population as indicated by the 12.4% population decrease for the period 1960 to 1970.

Load Growth

Load growth calculations from Exhibit F of the Permit Application Volume 2 produced a stated growth of 7.3% based upon the 1972 to 1981 data.

Data is absent for 1982, 1983, and 1984. This data would be helpful. During the period since 1981, emigration from the State of Montana has substantially increased due to the economic stress which to date has not improved. Additionally, load data was not included for the period 1960 to 1972 which would help us understand the trends for the past 20 years.

Reliability

MPC states in Section 2.2.2 of the Permit Application Volume 1 that "a problem exists when the Laurel Auto-to-South Laurel REA 50-kV is out of service because the existing 50-kV system cannot support the Laurel-Bridger area loads". This problem can easily be resolved by energizing the Laurel A to Bridger 50-kV to 100-kV at a cost of $430,000 as planned in the Permit Application. This would meet the +5% to -10% voltage fluctuation criteria for many years based upon the growth observed. The Laurel to Bridger line built in 1975 has not been a problem in terms of outages based upon data in Exhibit D of the Permit Application Volume 2. If this line were operated at its 100-kV capacity, there would also be no outage problem. In fact, the outages on the Laurel South 50-kV line must also be minor since the data in Exhibit D do not support a serious problem.

Proposed Solutions

The real problem that needs to be addressed is the outage problem in the transmission lines from Red Lodge to Mystic to Columbus to Laurel based on the data in Exhibit D of the Permit Application Volume 2. This section of the loop represents the overwhelming number of outages. These lines were constructed in the 1920s and need improvement. In fact, the needed improvement in the above mentioned lines coupled with energization of the existing Laurel A to Bridger line to the 100-kV level would serve the communities in the loop into the 21st century based on data presented in the Permit Application. In terms of the reality of the situation, it is incredible to us that MPC would not attempt to solve the severe outage problems where they exist in the loop rather than attempt to construct a new line which only improves the theoretical reliability to projected population where the data is not sufficient to establish growth.

Irreparable Damage to Real Property

If a new 100-kV line is constructed along the MPC preferred route, there would be permanent and irreparable damage to property which we own in Carbon County. The current Laurel A line crosses only a corner of our property. The terrain is uniquely suited for the purposes used and was the primary consideration in our purchase of the ground. Further encroachment over the ground would destroy the uses for which the ground was purchased. The use problems are as follows:

1. Power transmission lines have a yet undetermined effect upon mammals based upon multiple literature references provided by the DNRC. Two 100-kV lines, therefore, have an unknown potential to affect our breeding and raising of registered Quarter Horses.
2. The extremely rugged terrain has allowed us to demonstrate

for sale and test automatic weapons, machine guns, and other destructive weapons for law enforcement agencies and individual collectors. We believe that further encroachment by a second power line would destroy this use of the land.

3. The deep ravines are used for temporary storage of agricultural high explosives. The proximity of a second power line would deny us this use of the land.
4. We have a defined home site in our contract for deed which would become untenable if an additional power line is placed along the existing line.
5. The potential for subdivision of our ground would be dramatically affected or destroyed with the addition of a second power line.
6. The resale value of our property would be dramatically reduced with the addition of a second power line.
7. A second line would be aesthetically repugnant during our daily use of the ground.
8. We did not purchase the property so that it could become a power line corridor with a new line every 10 years.

Alternate Route

We recommend that if MPC is determined to construct a redundant transmission line that the railroad or highway routes are superior for the following reasons:

1. Right of ways exist for most of the distance and the cost of acquisition would be minimal.
2. The line could be easily constructed and maintained (more accessible than the hill route).
3. The line could be easily inspected.
4. The line would be less prone to vandalism in this location.
5. With the railroad and the highway routes, there is a reduced likelihood of both 100-kV lines being taken out of service by an act of God or vandal than if the lines were constructed side by side.

An alternative solution which should be examined is the upgrading of the existing Laurel to Bridger 100-kV line. The line in the last 10 years has had minimal outages. The line could be upgraded to an even greater reliability by improvements and reconstruction.

Conclusions:

Data contained in the MPC Permit Application indicates that the energization of the existing Laurel A to Bridger transmission line would meet power needs and MPC power reliability criteria for many years to come.

The 60 to 65 year old portions of the loop from Red Lodge to Mystic to Columbus to Laurel have severe outage problems that should be addressed by new construction.

A new power line from Laurel to Bridger would be redundant and would

serve no useful purpose other than increase theoretical reliability.

A parallel transmission line on the MPC preferred route would destroy the usefulness of our ground over which it would pass.

The railroad and highway routes are superior, if construction of a second 100-kV line is mandated, due to the advantages in construction, ease of maintenance, ease of repair, reduction in vandalism, reduced likelihood of parallel lines being taken down simultaneously by the same cause.

Very truly yours,

Nevins F. Harding

Rita M. Harding

LETTER No. 3

Route 1 Box 2482
Laurel, Mont 59044

June 27, 1985

Kevin Hart, Project Manager
Energy Division
Dept. of Natural Resources and Conservation
325 Ewing
Helena, Mont 59620

Dear Mr Hart:

I wish to comment on the DEIS for Montana Power's proposed Laurel to Bridger 100-KV transmission-line project.

My wife and I are landowners south of the Yellowstone River. At present two MPC transmission lines traverse our place including the 50-KV "A" line discussed in the report. My concern is that approval of the new 100-KV line will lead to a third set of structures crossing our property, resulting in further obstacles to planting, irrigating, fertilizing and spraying this ground. The area affected is currently

used for pasture. Could new structures be designed to accomodate all three sets of power lines? Should power consumption continue to increase south of Laurel, will future expansion lead to yet another set of structures or could it also be accomodated by a larger single set of structures put in place now?

Also, I wish to comment on a statement in the environmental portion of the DEIS. On p. 27 the report states, "Bald eagles ... winter along rivers in small numbers, though no regularly-used roosts are known in the study area. Bald eagle nests were located within the study area in 1971 and 1976, but none is known to be in use in the vicinity at present." Though I have not observed bald eagle nests along this stretch of the Yellowstone River, I have certainly seen bald eagles here during the winter, spring, and summer. Consequently, I would assert that bald eagles are roosting

Mr Heven Hart, p. 3.

and/or nesting along the river at present.

Yours very truly,

John A Berg

LETTER No. 4

Howard L. Thom
Route 1 South
Box 2450
Laurel, MT 59044

June 6, 1985

Kevin Hart, Project Manager
Energy Division
Department of Natural Resources and Conservation
32 South Ewing
Helena, MT 59620

Dear Mr. Hart:

I, Howard L. Thom, residing 2 miles south of Laurel am in favor of the M.P.C. proposed route for the 100kV Transmission line between Laurel and Bridger.

The railroad route is unacceptable to me for three reasons:

1. it would have to be routed within a few hundred yards of my home
2. a derailment would possibly knock the line out of service
3. sometime in the future the highway between Laurel and Silesia will have to be widened or replaced and the power line would interfer with that construction.

Yours truly,

Howard L. Thom

HOWARD L. THOM

LETTER No. 5

DEPARTMENT OF HIGHWAYS

TED SCHWINDEN GOVERNOR

2701 PROSPECT

STATE OF MONTANA

HELENA MONTANA 59620

June 28, 1985

RE: Draft EIS for the Proposed
Central Montana 100-kv
Transmission Project

RECEIVED

JUL 02 1985

MONT. DEPT. of NATURAL RESOURCES & CONSERVATION

Mr. Kevin Hart, Project Manager
Energy Division
Department of Natural Resources and Conservation
32 South Ewing
Helena, MT 59620

Dear Kevin:

Thank you for the opportunity to review the above captioned EIS.

The Department of Highways endorses the applicant's preferred route. The preferred route minimizes commuter and contractor truck traffic on the area's primary and secondary roads during an estimated 88 day construction period. If this option is not adopted, there is potential for an increase in the duration of the construction period, and a potential for new public road accesses.

You are advised to obtain a Standard Right-of-Way Encroachment Permit (RW-20) for any aerial road crossings or public road access routes. These permits are available from the DOH Billings District Office.

It is understood that the contractor will use adequate signing at public road accesses during construction. It is also understood that the contractor will not exceed rated load limits on any structure or road segment during construction or subsequent maintenance.

If you need additional information, please contact this office.

Sincerely,

Buck Harris

L.S. "Buck" Harris, Chief
Planning and Statistics Bureau

LSH:SS:sk:4d

cc: Duane Meiers
Homer Wheeler
Gerald Anders
Bill Dunbar, FHWA

LETTER No. 6

BILLINGS - YELLOWSTONE
CITY - COUNTY PLANNING BOARD

P.O. BOX 1178 | 4TH FLOOR, LIBRARY BUILDING, 510 N. 28TH, BILLINGS, MONTANA 59101 | PHONE 657-8248

June 6, 1985

Kevin Hart
Energy Division
Department of Natural Resources & Conservation
25 S. Ewing
Helena, Mt. 59620

RE: Draft Environmental Impact Statement for the Proposed Laurel to Bridger 100-kV Transmission Project

Dear Mr. Hart:

Thank you for the opportunity to review the above-mentioned draft, which my office received June 3. I did read the draft, and while I basically agree with the conclusions, I also have a few questions.

The draft EIS mentions that population growth may be experienced by this area in the future, and that ventures like the proposed Stillwater Mining Company project could affect the need for power in the region. With that in mind, have estimates been prepared regarding the potential number of households which could be served by the new transmission project or the ability to serve projects like the Stillwater Mining Company in the future? I am not sure what the capacity of the new transmission project will be and wonder how that fits in with anticipated demand.

Thank you for any information you can send us to answer these questions.

Sincerely,

Joanne Garnett

Joanne E. Garnett
Long-Range Planner

JEG/gjb

LETTER No. 7

IN REPLY REFER TO

United States Department of the Interior

1797 (930)

BUREAU OF LAND MANAGEMENT
222 North 32nd Street
P.O. Box 36800
Billings, Montana 59107

June 26, 1985

Kevin Hart, Project Manager
Energy Division
Montana Department of Natural Resources and Conservation
32 South Ewing
Helena, Montana 59620

Dear Mr. Hart:

Our staff has reviewed the draft Environmental Impact Statement (EIS) for the Montana Power Company's proposed Laurel to Bridger 100 kV transmission line. We have no comment to offer regarding the document, however, we would remind the developer that if the final alignment crosses any BLM administered property, right-of-way application must be filed with the BLM Billings Resource Area Office at 810 Main Street, Billings, Montana 59105.

Sincerely yours,

Michael J. Kirby

for John A. Kwiatkowski
Deputy State Director, Division of
Lands and Renewable Resources

cc:
DM, MCDO

LETTER No. 8

RECEIVED

JUN 27 1985

MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

In reply refer to: SJ

June 25, 1985

Kevin Hart, Project Mgr.
Energy Division, DNRC
32 S. Ewing
Helena, MT 59620

Please provide a copy of the Draft Environmental Impact Statement (DEIS) for the 100 kilovolt transmission line from Laurel to Bridger. The DEIS was listed in the Montana IGR Clearinghouse Bulletin #061285. A copy is attached for your reference. Thank you for your assistance.

Sincerely,

Alice V. Urban
Clerk

Send to: Bonneville Power Administration/SJ
P.O. Box 3621
Portland, OR 97208

LETTER No. 8 Cont.

MT850607-080-S Montana Department of Highways sent notice of their intentions to develop a project on Federal-Aid Secondary Route 354. The proposed project will consist of reconstructing the existing road starting approximately half a mile southwest of the junction with U.S. 93 in Polson, extending first westerly and then southerly for a total of approximately 5.5 miles. The purpose of this reconstruction project is to upgrade the road to more modern standards. The vertical and horizontal alignments of the road the road will be improved. No firm letting date has been established. This will depend on problems encountered during design, the availability of funding, and the acquisition of new right-of-way. Past experience has shown that projects of this nature take at least six or seven years to develop. The Department requests any information you may have regarding problems this project could cause or eliminate, environmental matters, views or opinions for or against the project. Contact:

Stephen C. Kologi, P.E., Chief Phone: (406)444-6242
Preconstruction Bureau
Montana Department of Highways
2701 Prospect Ave., Helena, MT 59620

Comments will be appreciated by July 5, 1985.

MT850607-081-X Montana Department of Fish, Wildlife & Parks submitted to the U.S. Department of the Interior an amendment to their Rocky Mountain Front Wildlife Studies project. This project was previously reviewed and approved and the amendment is for a time extension and funds to cover such extension. They are requesting an additional $71,364 federal grant and will use $23,788 additional state funds for the proposed amendment. Information concerning the amendment may be obtained from:

Dale Witt Phone: (406)444-2612
Montana Department of Fish, Wildlife & Parks
1420 East 6th Ave., Helena, MT 59620

MT850607-082-S A public meeting to receive comments on the Draft Environmental Impact Statement (DEIS) for the 100-kilovolt transmission line from Laurel to Bridger has been scheduled by the Department of Natural Resources and Conservation on Thursday, June 20. The 7:00 p.m. meeting will be held in the City Council Chambers, 115 West First, in Laurel, MT. The DEIS contains an analysis of the need for and alternatives to the proposed project. Locations for the powerline are also analyzed. The DEIS concludes that there is a need for the project and that Montana Power Co.'s preferred route, parallel to an existing powerline on the ridge east of the Clark Fork Valley, has the least cumulative impact and economic cost of the reasonable alternatives. DNRC has filed copies of the DEIS with local governmental officials in the project area and libraries in Laurel, Bridger and Billings. Additional copies may be obtained from and comments be sent to:

Order copy

Kevin Hart, Project Mgr. Phone: (406)444-6795-
Energy Division, DNRC 585-
32 So. Ewing, Helena, MT 59620

Written comments on the DEIS will be accepted until July 1, 1985.

MT850610-083-X U.S. Department of the Interior, Bureau of Land Management, and U.S. Department of Agriculture, Forest Service, are seeking formal

APPENDIX C

TRANSMISSION LINE OUTAGE INFORMATION FOR THE PERIOD JUNE 1983 - SEPTEMBER 1984

Outages Reported in the Laurel-Bridger Area
(June 1983 - September 1984)

The following list of outages uses several abbreviations. Some of the abbreviations do not follow common usages. The following definitions are cited to prevent misunderstanding.

DLC	- Dead Line Clearance
'	- Hours
"	- Minutes
ABSW	- Air Break Switch
PT	- Potential Transformer
Disco	- Disconnect
Diff	- Differential
Bad Bell	- Bad Insulator
OCB	- Oil Circuit Breaker
Ops	- Operations
RR	- Railroad
Dist	- Distance Relay
Supr	- Supervisory

1983

Outage Location	Time/Date of Outage		Cause
Laurel-Mystic 50 kV	Momentary	6/1	Unknown
Mystic-Laurel 50 kV	Momentary	6/18	Unknown
Mystic-Columbus 50 kV	Momentary	6/25	Unknown
Laurel-Bridger 50 kV	Momentary	7/6	Unknown
Mystic-Columbus 50 kV	1"	7/6	Unknown
Mystic-Laurel 50 kV	39"	7/6	Unknown
Mystic-Columbus 50 kV	9' 10"	7/6	Pole Down DLC to Hayes
Mystic-Laurel 50 kV	1' 38"	7/6	Unknown
Mystic-Laurel 50 kV	9' 26"	7/9	Unknown
Mystic-Laurel 50 kV	Momentary	7/11	Unknown
Laurel-Bridger 50 kV	Momentary	7/13	Unknown
Mystic-Columbus 50 kV	1"	8/1	Unknown
Laurel-Mystic 50 kV	Momentary	8/28	Unknown
Mystic-Columbus 50 kV	1"	9/18	Supervisory Wire Broken
Mystic-Columbus 50 kV	Momentary	9/19	Heavy Snowfall
Mystic-Laurel 50 kV	8' 14"	9/19	Heavy Snowfall
Laurel-Mystic 50 kV	Momentary	10/19	Unknown
Mystic-Columbus 50 kV	7' 11"	10/30	One Phase Down Between Columbus and Absarokee
Laurel-Bridger 50 kV	Momentary	10/31	Unknown
Laurel-Bridger 50 kV	Momentary	10/31	Unknown

1984

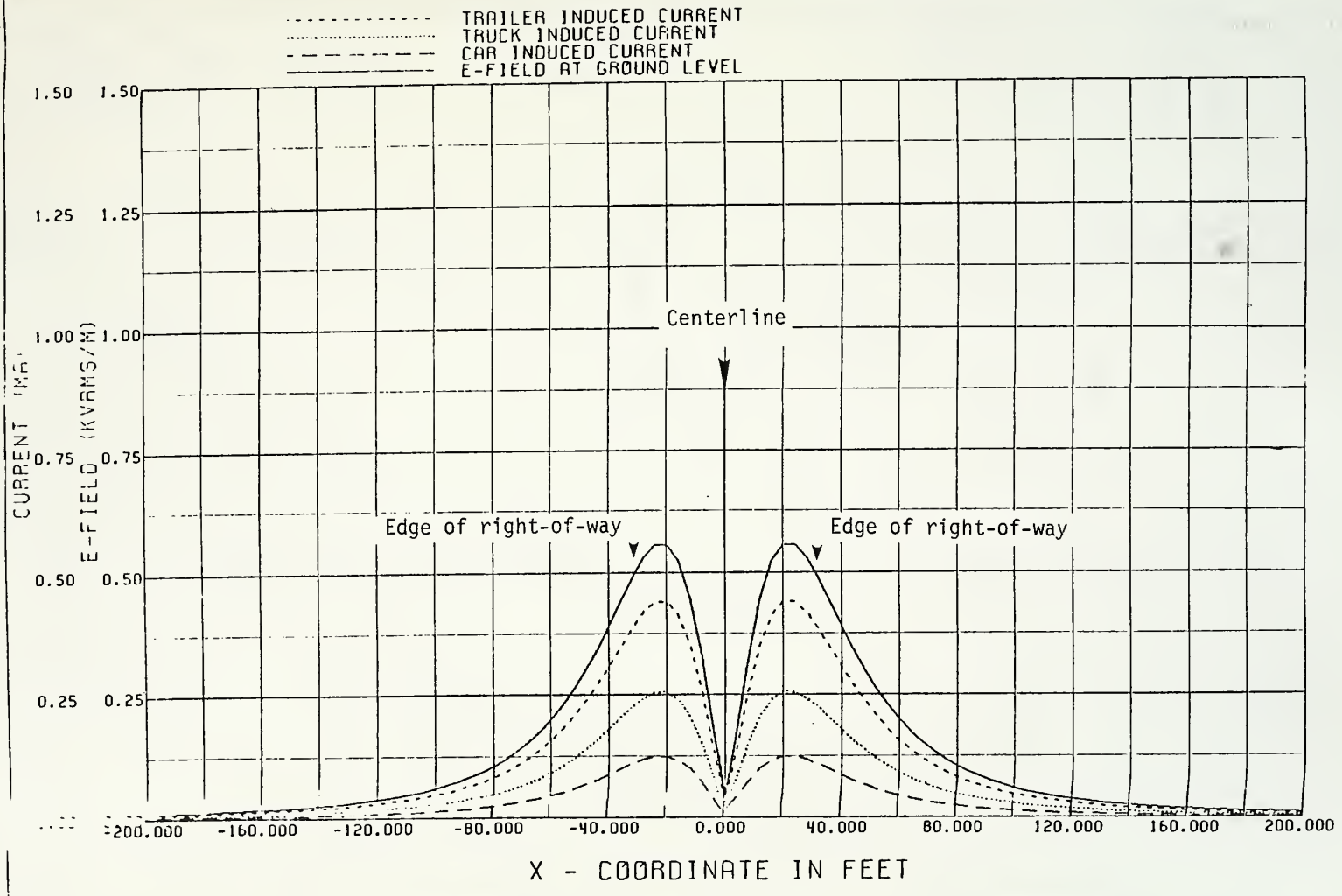
Outage Location	Time/Date of Outage		Cause
Mystic-Laurel 50 kV	4' 8"	1/29	Floater Found On Bridger Pump Tap
Mystic-Columbus 50 kV	Momentary	3/8	Unknown
Laurel-Mystic 50 kV	Momentary	3/11	Unknown
Laurel-Mystic 50 kV	Momentary	4/19	Unknown
Mystic-Laurel 50 kV	1' 23"	4/23	Unknown
Laurel-Mystic 50 kV	Momentary	4/30	Unknown
Laurel-Mystic 50 kV	4"	5/16	Unknown
Laurel-Bridger 50 kV	6' 33"	5/17	Line Down
Laurel-Mystic 50 kV	Momentary	5/26	Unknown
Columbus-Cattleland 50 kV	26"		Moving House DLC to B Grossman
Mystic-Fromberg 50 kV	Momentary	6/14	Unknown
Mystic-Columbus 50 kV	Momentary	6/15	Unknown
Mystic-Columbus 50 kV	Momentary	6/16	Unknown
Columbus-Mystic 50 kV	Momentary	6/16	Unknown
Laurel-Bridger 50 kV	2' 11"	6/20	DLC to P Letz
Mystic-Red Lodge 50 kV	Momentary	6/20	Unknown
Laurel-Bridger 50 kV	Momentary	6/20	Unknown
Laurel-Red Lodge 50 kV	Momentary	6/20	Unknown
Mystic-Laurel 50 kV	Momentary	6/29	Unknown
Bridger-Laurel 50 kV	23"	7/12	Unknown
Mystic-Columbus 50 kV	7'	7/12	Pole Down
Mystic-Columbus 50 kV	Momentary	7/21	Unknown
Mystic-Laurel 50 kV	Momentary	7/29	Unknown
Mystic-Laurel 50 kV	Momentary	8/1	Unknown
Mystic-Columbus 50 kV	Momentary	8/1	Storm
Mystic-Columbus 50 kV	Momentary	8/1	Storm
Mystic-Columbus 50 kV	Momentary	8/1	Storm
Mystic-Laurel 50 kV	50"	8/2	DLC to E Kheen
Mystic-Columbus 50 kV	Momentary	8/4	Unknown
Mystic-Columbus 50 kV	Momentary	8/4	Unknown
Mystic-Laurel 50 kV	Momentary	8/5	Lightning
Mystic-Laurel 50 kV	Momentary	8/6	Unknown
Mystic-Laurel 50 kV	Momentary	8/9	Unknown
Mystic-Laurel 50 kV	Momentary	8/9	Unknown
Laurel-Mystic 50 kV	Momentary	8/9	Unknown
Laurel-Columbus 50 kV	16"	8/9	Switch for the REA
Columbus-Mystic 50 kV	2' 26"	8/14	DLC to R Swanson

1984 (cont)

Outage Location	Time/Date of Outage		Cause
Columbus-Mystic 50 kV	Momentary	8/15	Unknown
Columbus-Mystic 50 kV	7' 3"	8/15	Beaver Cut Tree Down
Mystic-Columbus 50 kV	Momentary	8/20	Unknown
Mystic-Columbus 50 kV	Momentary	8/24	Unknown
Mystic-Laurel 50 kV	Momentary	8/24	Unknown
Mystic-Laurel 50 kV	Momentary	8/24	Unknown
Mystic-Columbus 50 kV	4' 5"	9/6	DLC to R Swanson
Mystic-Columbus 50 kV	Momentary	9/15	Storms in Area
Mystic-Columbus 50 kV	Momentary	9/16	Storms in Area
Laurel-Red Lodge REA 50 kV	20"	9/24	Heavy Snow on Trees and Poles

APPENDIX D

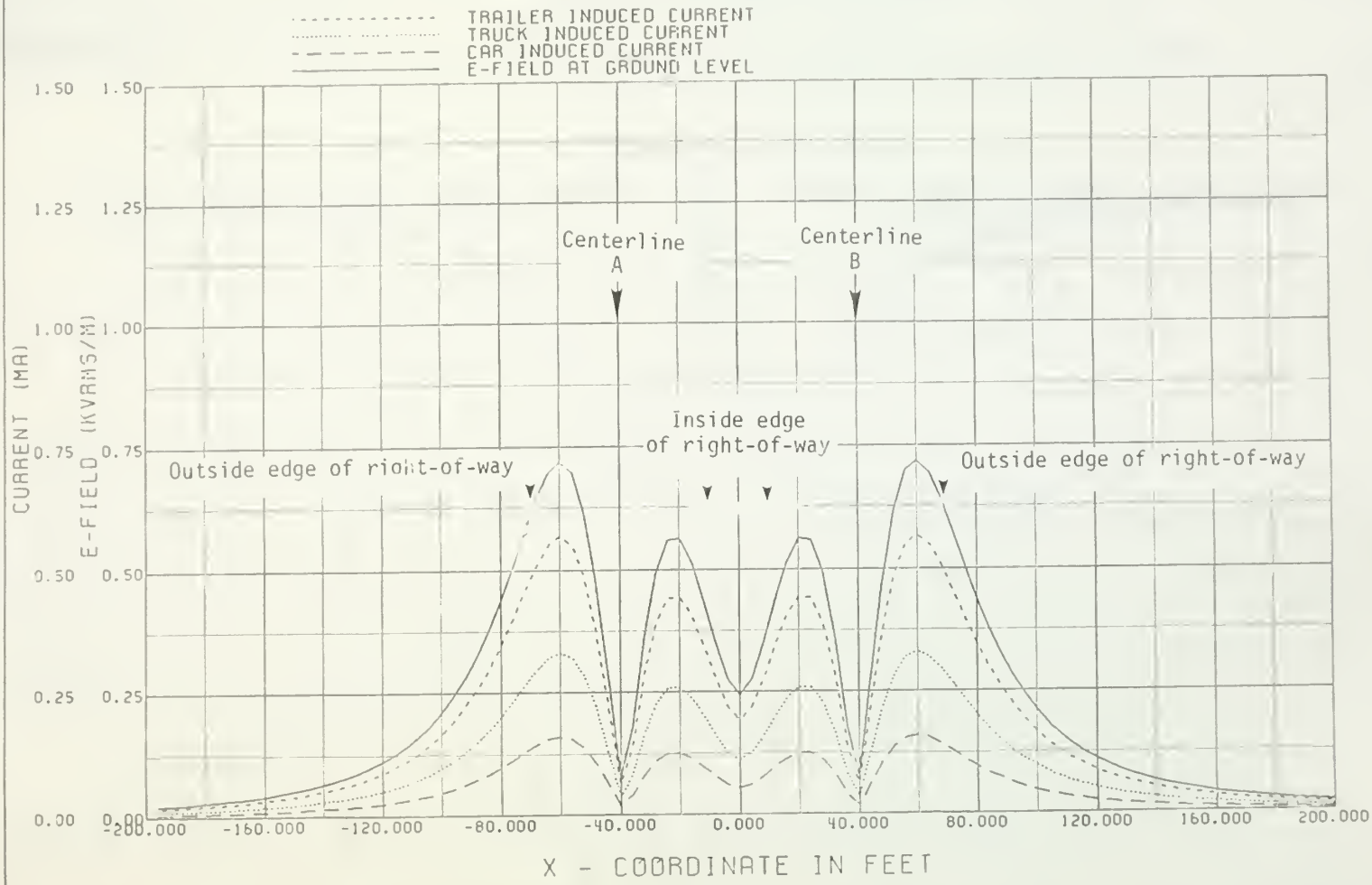
CALCULATED ELECTRIC FIELD STRENGTHS FOR SINGLE 100-kV LINE WITH H-FRAME STRUCTURES AND TWO PARALLEL 100-kV LINES WITH H-FRAME STRUCTURES LOCATED 80 FEET APART



POWER TECHNOLOGIES INC.

ELECTRIC FIELD PROGRAM

100KV H1X TANGENT STRUCTURE (60 DEG SAG)



POWER TECHNOLOGIES INC.

ELECTRIC FIELD PROGRAM

PARALLEL 100KV HIX LINES, ABC-ABC, C=30', 336 ACSR

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
Energy Division
Capitol Station
Helena, Montana 59620

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